FROM HOT METAL TO COLD TYPE: LABOUR PROCESS THEORY AND NEW TECHNOLOGY IN THE NEWSPAPER INDUSTRY

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Kerr, C., and Fisher, L.H. "Plant Sociology: The Elite and the Aborigines." In Common Frontiers of the Social Sciences. ed. M. Komarovsky, Glencoe: The Free Press, 1957:281-309.

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To George Hill, my dearest friend,

colleague and mentor.

ABSTRACT

Newspaper production in New Zealand has been radically transformed in the past five years by computer-based and associated technologies. This thesis is based on a case study of one metropolitan newspaper, The Star, which covered three of those years. The study examines the introduction at The Star of a computer-based system of newspaper production, and the implications of this system for job opportunity, control and skill. The study uses Braverman's analysis, in Labor and Monopoly Capital, to document the process of change at The Star and to extend the theoretical analysis of the labour process. A key argument of the thesis is that computer technology sets limits to, but does not determine, job structure. An understanding of how and why people's jobs and skills are affected must be sought in relations of conflict and alliance forged within and between groups of employers and workers in the newspaper industry. Relations between different groups of workers at both national and shop-floor level were influenced, in important ways, by internal labour markets based on objectively-determined and subjectively-perceived skill differentials - in which gender-based ideological assumptions played a crucial role.

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CONTEXT OF STUDY

CHAPTER 1

INTRODUCTION

1. Introduction

Newspaper production in New Zealand has been radically transformed in the past five years by computer-based and associated technologies. This is a case study of one metropolitan newspaper during three of those years. The study hopefully avoids some of the drawbacks of 'plant sociology'[1] since it is set within the context of production changes throughout the newspaper industry in general, and is concerned with industrial relations at both national and shop-floor levels. The study critically evaluates the utility of 'labour process' theory in understanding technological change in the workplace. The issues of skill, job opportunity and control which it addresses reflect the particular socio-economic climate of New Zealand in the early 1980s.

Computer-based technologies, such as those introduced in the newspaper industry, began permeating a diverse range of New Zealand industries in the late 1970s. This chapter shows that the technologies were a consequence of revolutionary developments in physics and computer science which gave rise to the micro-processor. The chapter examines the distinguishing features of micro-processor technology in

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[1] See Kerr and Fisher, 1957.

order to show why the technology has serious implications for employment on the one hand, and economic growth on the other, at a time of rising unemployment and economic stagnation in the Western world. The chapter briefly reviews the debate over the likely implications of micro-processor technology for New Zealand's economy and society - a debate which gave impetus to the present study of the newspaper industry at a time when the focus of industrial sociology was on the theoretical and empirical implications of Braverman's classic study of technological transformation and deskilling.[1]

2. Socio-economic Context

Regardless of political philosophy, successive New Zealand governments have pursued 'full employment' policies from the late 1930s to the late 1960s (Rosenberg, cited in Franklin, 1978:119). Beginning in 1972, however, registered unemployment levels show a steady increase, and this increase is particularly marked after 1977. Analysis of the 1981 Census suggests that 60,000 New Zealanders, out of a labour force of approximately 1.33 million, were unemployed and seeking work (Gidlow, 1982:45). Since that date the level of unemployment has continued to rise.[2]

As a necessary condition of a policy of full employment, New Zealand governments have progressively intervened

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[1] Labor and Monopoly Capital, 1974.

[2] In June 1983, the number of registered unemployed had reached 74,930, a figure which typically under-represents the actual level of unemployment in this country because of the methods used in its measurement (The Press, June 15, 1983).

in the economy to promote growth, price stability and balance of payments equilibrium. However, as analysis shows, the consistent economic growth and relative stability of the 1950s and 1960s was disturbed in the early 1970s by unprecedented inflation and currency instability, shaken by the oil crisis of 1973 and brought to an end by prolonged world recession from 1974 onwards (New Zealand Business Conditions, 1978, 10:2). The economic 'shocks' of the 1970s exposed underlying weaknesses in the structure of the New Zealand economy, heavily dependent on overseas trade in primary products, and its requirement to achieve growth in the domestic economy and to maintain balance of payments equilibrium (ibid.).

Against this background, the New Zealand Government, employers, trade union officials and the general public became increasingly aware of the development in the United States and Europe of a new information technology whose particular characteristics had important implications for economic growth, job opportunity and work skills in this country.[1] The 'new technology' as it came to be known, was based on developments in computers which enabled the information-processing capabilities of the large 'mainframe' computers of the 1950s and 1960s to be incorporated on a

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[1] See for example, Anon., September 1979; du Fresne, 1979; news items: The Evening Post, August 22, 1979, and The Press, December 15, 1979; Probine, 1979; Ray, 1979; Tait, 1979; "Growth, Technology and Opportunity" Seminar, 1980; Victoria University of Wellington Industrial Relations Centre, 1980; and Inter-Union Working Party, 1980; and Poole, 1980.

small wafer or chip of silicon.[1] The present study began in April 1980 amid growing controversy over the introduction of the technology into New Zealand. The following comment in an August 1979 article on the topic illustrates the nature of the debate (Ray, 1979:14):

> *The [microelectronics] industry is just beginning to prosper but, if its growth continues unfettered, it threatens revolution. For the new miracle machines, although they save work and drudgery, also destroy work and traditional notions of work - that everyone has the right to work, for instance. The machines may mean business, but they don't mean jobs. If New Zealand follows overseas trends, and so far it has, within 10 years 40 per cent of office jobs will no longer exist.*
>
> *Machines will, if we wish, replace postmen, telephone operators, airline clerks, bank tellers, shop assistants, storemen, clerks and thousands of factory workers. Even the boss isn't safe, for the new-fangled machines are obedient and need less supervision than people.*

3. Micro-processor Technology

The significance of the micro-processor for employment and its potential for economic growth can be understood by examining the particular characteristics of the technology. The micro-processor is manufactured using micro-electronic technology. Electronics involves controlling electrons - negatively charged particles that are a part of all atoms - by means of thermionic valves

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[1] Parallelling the development in computing at this time were significant developments in communications technology. 'Information technology' is the result of combining the two developments. The computer can store large amounts of information and process it at high speed. Communication technologies allow large amounts of information to be transmitted over very large distances. The cost of storage and transmission has, in each case, fallen rapidly in recent years (Probine, 1979:274).

(as in older radio sets) and by their modern equivalent, the transistor or similar devices (Williams, 1979:2).

Micro-electronic technology, sometimes referred to as silicon chip or semiconductor technology, grew out of two scientific developments around 1950, one in physics, the other in computer science. These two developments ushered in the so-called 'Silicon Age'.[1] The first, the invention of the transistor replacing the valve, began a rapid process of miniaturisation in electronics technology, ending with the concept of the integrated circuit. The heart of the change was the discovery that a transistor could be reproduced on a silicon chip (Probine, 1979:273). With the development of the integrated circuit, almost all of the important components of a computer could be contained on the tiny surface of a chip of silicon. As Probine has explained (ibid.), the integrated circuit "is built up by a series of chemical, metallurgical and photolithographical processes, repeated again and again until all the microscopic components and inter-connections have been layered on". The chip, with all the electronic circuits of a small computer placed on it, is called the micro-processor. In 1960, the number of transistors or components which could be formed on a single chip of silicon was about one; by 1970 it was 1,000, and the number was anticipated to be one million by 1980 (Management Decision, 1979:481).

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[1] Management Decision, 1979:481.

The reductions in size and cost achieved in this process of miniaturisation are illustrated in the following table (Kennedy, 1980:26) which compares a minicomputer available in 1970 with a micro-processor available 10 years later. As the table shows, although size and cost were significantly reduced, there was no loss of computing power.

TABLE 1

COMPARISON BETWEEN MINI-COMPUTER AND MICRO-PROCESSOR

Feature	Mini-computer	Micro-processor
No. of devices[1]	20,000	20,000 to 70,000
Cost	$30,000	$200
Processing power and speed	Equivalent	
Size of processing unit	100,000 mm^2	40 mm^2

(Adapted from Kennedy, 1980:26.)

Other cost savings can be achieved with the micro-processor: for example, where the technology is used for data-processing, the floor space required is significantly reduced.[2] The cost of operating this type of equipment is similarly reduced.[3]

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[1]The table is based on an estimate of 20,000 transistors which is the minimum required to perform the range of tasks commonly expected from a computer. For technical reasons, such an estimate is very inexact (Kennedy, 1980:26).

[2]In 1977, Noyce estimated that the current computer occupied 1/30,000 the volume of the first large electronic computer built in 1950 (Forester, 1980:32).

[3]Noyce (Forester, 1980:32) noted in 1977 that the current micro-computer consumed the power of a light bulb rather than that of a locomotive.

The second crucial event ushering in the Silicon Age was the introduction of the concept of the stored program [sic], or the idea that a computer could store in its own memory information that could "tell it what to do" (Management Decision, 1979:481). As Kennedy (1980:26) has explained,

> *ever since the silicon chip was limited to a single transistor, the unit cost has been tightly controlled by the mass production of the device. As techniques were developed to increase the "functionality" of a single chip by increasing the number of transistors on the chip, it became more difficult to design a single unit which was sufficiently universal to take advantage of the economics of mass production.*

Semiconductor manufacturers needed a technique whereby the individual devices on a chip would be effectively 'rewired' by external means.

The general purpose computer of the 1960s, where the program or 'software' specified the function of the system, was obviously such a device.[1] By changing the program, a process very much simpler than changing thousands of wires, the computer's function could be completely altered (ibid.). To illustrate this point, Kennedy (ibid.) notes that, given the necessary external hardware, a computer can within a matter of seconds be changed from a machine calculating a payroll to a device controlling bottle washing, energy flows in a paper mill, or the intimate speed control of rolls in a steel mill. Kennedy notes further that, "by carrying this technique of

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[1] For further details see Appendix A.

programmability across to mass-produced chips, the micro-processor was born." The micro-processor, with minor alterations in function, parallels the central or main processing unit of the large computer (ibid.).

Programmability enables the micro-processor to perform arithmetical operations, control other machines and store and manipulate information (Central Policy Review Staff, 1978:2). In carrying out these various tasks, the micro-processor has three conceptually different functions:[1] 1) in products as control devices (for example, electronic self-service petrol pumps[2]); 2) in production processes as control devices. For example, a micro-processor based system enables Fisher & Paykel to produce 11 whiteware models on the one production line[3]; 3) in business administration as text and data-processing devices. Databank, for example, relies on computing and telecommunications technologies for its nation-wide electronic banking network[4].

4. Implications of the Technology

The socio-economic implications of micro-electronics can be appreciated by summarising the five main characteristics of the technology:

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[1]This distinction is made in Management Decision, 1979:480.

[2]New Zealand Employers' Federation, [n.d.].

[3]See Probine, 1979:275.

[4]See Databank Systems [n.d.].

(a) Size

The micro-processor occupies a very small physical space.

(b) Flexibility

The concept of the stored program, together with the size of the micro-processor, enables the technology to be used in a wide range of consumer and capital items and industrial techniques and processes in which computing and control functions are required.

(c) Cheapness

Developments in miniaturisation have dramatically reduced purchase price and operating costs without reducing computing power.

(d) Rate of Technological Development

The rate of development of each phase of the technology has been accelerating rapidly. Further major developments in electronics and computing are expected to occur over a similar brief period of time.[1]

(e) Computing and Control Functions

Micro-processors can perform complex computational tasks and information-processing involving human judgement and decision-making.

For these five related reasons, commentators have compared the micro-processor with steam power and electricity generation in suggesting the central role of the new technology in bringing about a second industrial

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[1] Gledhill, The National Times, week ending May 12, 1979.

or 'information revolution'. As Freeman has argued, "the microelectronic revolution is not just 'one more step' in the process of technical change or one more new product" (Forester, 1980:317). Electronic information technology is a 'heartland' technology "which can give leverage over the whole (economic) system and raise its level of performance" (ibid.). Similar economic breakthroughs were made in the nineteenth century when first steam and then the electric motor were used to improve productivity.[1]

Described as "perhaps the most potentially pervasive single technology to have emerged since the industrial revolution," (Sleigh et al., 1979:2) micro-electronic technology can improve efficiency and productivity across all manufacturing, service and distribution industries, whether in the public or private sectors (ASTMS, [n.d.]:1). The technology can create new products, replace existing ones and extend human and machine capabilities. It can change production and design techniques, and office methods (Central Policy Review Staff, 1978:2). As the use of micro-electronics becomes more widespread therefore, increasing numbers of people in an increasing variety of occupations will be affected. Significantly, many of these occupations will involve skilled intellectual work. The first industrial revolution 'mechanised' the hand and muscle as machines performed tasks previously accomplished by physical labour. This second information or electronics

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[1] Ibid.; ASTMS, [n.d.]:1; and Jenkins and Sherman, 1979: viii.

revolution automates mental labour as complex information-processing and decision-making tasks are carried out by the new micro-computers.[1]

Commentators comparing the two 'revolutionary' periods of technological development note that unlike the industrial revolution which took place over a period of several hundred years, major developments in computing are occurring in a span of mere decades (Gledhill, op.cit., 1979) compounding the social and economic effects of the new technology.

5. Response to the Technology

Initial overseas response to developments in micro-electronics and their impact on society and the economy tended to polarise into 'pessimistic' and 'optimistic' views.[2] The pessimistic view gave emphasis to the job 'killing' or displacing effects at a time of rising unemployment in the Western world.[3] Wheelwright (1980:10-11) for example, expressed the concern of many when he pointed out that capitalism had a long history of replacing people by machines, a process which resulted

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[1] Cherns (1978:654) distinguishes different 'orders of automation' and notes their effects in displacing different levels of work skills. He points out that many heavy manual jobs have been eliminated by quite low orders of 'automacity' or mechanisation, and that "as we ascend the order some quite highly skilled jobs are lost".

[2] Campbell, 1980.

[3] A West German study, reported in 1978, forecast a fall in office employment by 1990 of 40 per cent, equivalent to two million jobs; and an official French report, the Nora Report, showed how the micro-processor would "attack" jobs in the existing information sectors like banking, and with the use of industrial robotics, destroy jobs in manufacturing as well (cited in Forester, 1978 a and b, pp. 331 and 388 respectively).

in minimal dislocation and minimal unemployment only if three conditions were satisfied:

1) the scale of change is not too large,

2) the rate of change is not too fast, and

3) there are sufficient growth areas in other parts of the economy to absorb unemployment.

Given the particular characteristics of micro-electronics, and world-wide recession, Wheelwright and others concluded that dislocation and unemployment would be severe.[1] Widespread concern was also expressed about the probable impact of information technology on the intellectual work of skilled tradesmen, white collar workers and professionals, including machine tool operators, clerical workers in banking and insurance, design draughtsmen and workers in the computer field itself.[2]

Those adopting an optimistic stance cautioned against taking too dramatic a view of the pace of technological change and its adverse social effects.[3] They argued that historically technology and investment has created rather than destroyed employment opportunities, since technological advance usually lowers costs and prices, thereby stimulating demand. In turn, this increases employment opportunities and real incomes. The optimists also argued that the pace of change was more likely to be

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[1] The titles of a sample of the overseas literature are suggestive: Forester, "Society with Chips and without Jobs", 1978;a,b; TNC, The Job Killers, 1978; Hines and Searle, Automatic Unemployment, 1979; and Jenkins and Sherman, The Collapse of Work, 1979.

[2] See Greenbaum, 1978; Cherns, 1978:654; and Cooley, 1980:2-10.

[3] See for example, Central Policy Review Staff, 1978; and Sleigh, et al., 1979.

gradual than sudden, increasing the likelihood that the labour market would be able to make the necessary adjustments. For example, the British Central Policy Review Staff's (CPRS) report noted that:

> *since the industrial revolution, there have been substantial shifts in the pattern of employment, but the economy as a whole has adapted to technological change and to an ever-expanding labour force. Indeed, technological change has always been a major source of economic growth and rising real incomes; this should be equally true of microelectronics. (1978:3)*

The optimists did not necessarily discount adverse employment effects. They tended to argue instead that, as had occurred with previous technological revolutions, micro-processor technologies would create, as well as destroy, jobs. The CPRS Study Group, acknowledging that the long-term effects of micro-electronics on employment were "complex and uncertain" (ibid.:4), added a cautionary note:

> *We have yet to be convinced that [it] will be a major factor for the worse, unless the general prospects for employment make for increased unwillingness to accept technological change. (ibid.:5)*

Those adopting a generally optimistic view disagreed about whether the technology would tend to affect the more highly skilled or the less skilled worker.[1]

Drawing on overseas reports and experience, debate raged in New Zealand during 1979 and 1980 over the social and economic implications of new technology for this

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[1] See Central Policy Review Staff, 1978:15ff.; and Sleigh et al., 1979:95.

country. Overseas projections of large-scale technological unemployment were extrapolated to the New Zealand context as the country faced growing unemployment, high inflation and economic stagnation.[1] The debate spawned a series of seminars, television programmes, newspaper articles and discussion papers by union officials, employers, government researchers, technical experts and academics. Indeed, the Minister of Labour, J.B. Bolger, was moved to comment during a 1980 address on the subject:[2]

> *Although much concern is expressed on possible job loss associated with technology, it does seem to me that seminars and conferences on "The New Technology" may well become one of the great growth industries of the '80s.*

In general, the pessimistic view of the technology's likely impact tended to be associated with workers and their unions,[3] while the optimistic view was typically espoused by employers' groups, business consultants and government.[4] For example, the New Zealand Trade Union Policy on New Technology[5] - referring to the issue as "one of the biggest challenges ever presented to the trade

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[1] For example, see Ray, 1979.

[2] The Main Report, 1980.

[3] See for example, Harris, 1979; Inter-Union Conference on Technology, 1980; and Goulter and McCall, 1981.

[4] For example, see Bolger, 1979; Tait, 1979; and New Zealand Employers' Federation, 1980.

[5] Adopted by a special inter-union conference on technology held in Wellington on April 9-10, 1980 (unpublished mimeo); and subsequently adopted by the Federation of Labour at its 1982 Conference (The Press, May 8, 1982).

union movement" - notes that proponents of new technology

> *claim that it will increase prosperity, eliminate dirty or dangerous jobs and lead to an all-round improvement in living standards. On the other hand, it contains a potential to destroy jobs, to eliminate skills, and to increase the power of management over the workforce. Its uncontrolled use by employers for their own ends will lead to mass unemployment and the destruction of more trade unions than have ever been destroyed by anti-union legislation.*

Despite its pessimism over the loss of employment and skills, the trade union movement did not oppose new technology.[1] What the unions insisted on, however, was that its introduction be controlled, the increased productivity shared and workers' job opportunities protected by relocation and retraining programmes.[2]

The New Zealand Employers' Federation, in its 'New Technology Policy',[3] recognised the need for "a positive and constructive approach" to the adoption of new technology to promote economic expansion, and thus wider opportunities for employment and job skills. As the Policy points out,

> *by continuing to use out-dated and unproductive technologies the living standards of New Zealand will fall in comparison to other countries... new technology has an essential part to play in New Zealand's development, the improvement of the working environment, the reduction of costs and the easing of inflation. (ibid.)*

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[1] Ibid.; and see also Inter-Union Working Party, 1980:7.

[2] Ibid.: 4,18.

[3] Adopted on August 11, 1980. (Written communication from Poole, Director, Employers' Federation.)

At the same time, the Federation advocated that employers appreciate the trade union movement's concern. For this reason the Policy provides a set of suggested guidelines governing the implementation of new technology. Moreover, the Policy notes that technological "changes in the workplace are the legitimate concerns of those people involved in the workplace" and therefore that "full consultation should take place with employees likely to be affected by the changes".

Technical experts and Government spokesmen drew attention to the country's economic problems and the unemployment that was inevitable unless New Zealand grasped the opportunities afforded by the new technology.[1] As the DSIR's Discussion Paper on opportunities for New Zealand in electronics explained:

> *unless we in New Zealand move in a positive manner to adopt the important developments based on electronics technology, the efficiency of business and manufacturing operations in New Zealand is likely to be adversely affected. As a consequence we would probably find it difficult to compete on international markets with exported products. (Cornwall, 1981:68)*

Given the structure of the New Zealand economy, this failure to compete internationally would lead inevitably to job losses. The technology therefore presented New Zealand with what Probine refers to as a "curious dilemma"[2] (1979:277): if the technology were adopted it would lead

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[1] See for example Bolger, 1979; Probine, 1979; and Cornwall, 1981.

[2] The dilemma is not, of course, particular to New Zealand as Jenkins and Sherman (1979:150) and Rothwell and Zegveld (1979:12) clearly show.

to structural unemployment, but if it were resisted it was clear that New Zealand would be unable to maintain a competitive edge in overseas trade, and growing unemployment was then inevitable.

6. Sociological Context for the Study

Industrial sociology has traditionally used technology as an explanatory variable in studies of the workplace.[1] The prevailing view of technology in the 1950s and 1960s concerned its effects on worker morale "broadly defined as the satisfaction people have with their jobs and their companies" (S. Hill:85). Technology is thought to influence morale in the following ways: it determines job tasks and the division of labour and occupational structure of the workplace; and is associated with the size of the factory or plant (ibid.). According to this perspective, technology is the independent variable in any explanation of changes in the workplace which accompany technological transformation.

Public debate over new technology and its implications for New Zealand has been invariably framed in terms of a similar 'social impact of technology' model. The implied technological determinism "entwines two strands of belief: that technology has its own 'logic'; and that what can be done will inevitably be done" (Cherns, 1978:654).

Harry Braverman's classic study, Labor and Monopoly Capital (1974), in strongly refuting this deterministic

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[1] For a useful and concise review of the literature see Chapters 5 and 6 in S. Hill, 1981.

view, changed the focus of industrial sociology to a concern with technology as the outcome of a process of human decision-making. In his study Braverman argued that employers developed and used new techniques to remove the control workers were able to exert over production because of their knowledge of the production process and the skills they exercised in carrying out their work. Reducing worker control was essential because of the threat it posed to the accumulation of profits. Sociological interest in technology and society since 1974 has overwhelmingly taken the form of theoretical and empirical debate with Braverman.[1] The present thesis is a detailed empirical study of a specific period of technological transformation in one industry as a basis for extending the theoretical analysis of the labour process.

An important insight drawn from the neo-Marxist perspective on the labour process is the recognition that the development of new technologies and their implementation in the workplace are the consequence of human and social choice, a theoretical assumption which underpins the approach taken in the present study. Nevertheless, the choices that <u>are</u> made have consequences for the employment opportunities and skills of those whose jobs are affected. The thesis therefore examines both the process by which

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[1]For example, see Aronowitz, 1978; Burawoy, 1978; Rubery, 1978; Beechey, 1979; Elbaum, <u>et al</u>., 1979; Elger, 1979; Zimbalist, 1979; Stark, 1980; S. Hill, 1981; Lee, 1981; Littler and Salaman, 1982; and Wood, 1982.

decisions are made to introduce new technology, and its social effects. It is concerned with the following kinds of questions:

1) Who had control over the development and implementation of the technology?

2) What were the effects on employment and the quality of work?

3) Are these inevitable consequences of micro-electronic technologies?

In attempting to find answers to these questions with respect to the newspaper industry, I identify, by means of both conceptual argument and empirical investigation, some key factors in the relationship between technology, change and the workplace.

7. Newspaper Industry as a Case Study

A major drawback to Braverman's work is that the abstract level of analysis employed leads to a tendency to over-generalization. Critics call for concrete historical studies of specific industries.[1] For example, Paul Sweezy, in the Foreword to Labor and Monopoly Capital (Braverman, 1974;xii), notes that

> *there is hardly an occupation or other aspect of the labour process which would not repay a great deal more detailed historical and analytical investigation than are accorded to it in this broad survey.*

Smith (1980:236) writes that the newspaper industry was the first of the traditional major industries to start the

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[1] Aronowitz (1978:144) for example argues that the "tendency toward overgeneralization ... prevents investigators from making a concrete, historical study of the differences among industries, of the definitions of skill and of the mediation of culture" - all issues which emerged in the fieldwork as central for the present study. See also Elbaum et al. (1979); and Stark (1980).

process of complete transformation to computerised methods of production. Describing the printing industry as a "vivid and under-studied example of technological change", Winsbury argues that "there could be few more dramatic and many-sided case studies left for almost laboratory observation" (1976:45). The newspaper industry is also an appropriate choice for the study of the interdependence of the social relations of production and technology since, in Zimbalist's words, it "has combined rapid technological change with a reputation for effective worker control over the labor process" (1979:103).

As already indicated, this thesis is a case study of technological and social change in one metropolitan newspaper, The Star.[1] Since the late nineteenth century, production at The Star has been based on a 'hot metal' method using linotype machines to create lines of type cast in molten metal. With only minor modifications, this method has prevailed in newspapers throughout the world until the recent development of electronically controlled photocomposition of type, referred to in the trade as 'cold type' production.[2]

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[1] The Star is the South Island's biggest evening daily newspaper. It is owned by New Zealand Newspapers Ltd., Christchurch, which is a member of the NZ News Ltd. group. New Zealand Newspapers also publishes the Weekend Star (Welcome to The Star, pp.2-3). The Star's audited net circulation, in February 1982, was 60,300 copies daily (Advertising Rate Card, February 1, 1982). NZ News also owns the Auckland Star.

The Star began life on May 14, 1868, as an offshoot of the Lyttelton Times. The newspaper retained its present name until 1935 when it became the Christchurch Star-Sun. In 1958 the newspaper became known as the Christchurch Star (Christchurch Star, Special Centennial Supplement, May 14, 1968). It reverted to its original title in May 1980 to mark the change to a fully computerised system of typesetting.

[2] The cold-type method produces type as artwork on photographic paper.

The first and major change at The Star, introduced during 1979 and 1980, resulted in 77 linotype operators, compositors and general hands being retrained to use computer terminals to set and compose type, and to control the operation of the entire computer-based system. At the same time, 7 photo-engravers and 13 stereotypers had their jobs transformed, or were made redundant, when automated photolithographic equipment replaced the traditional hot-metal method of plate-making. The change also affected approximately 50 sub-editors, proof-readers, rotary press machinists and teletypesetter operators.

This study documents the change from hot metal to cold type through observations, interviews and extended conversations with various occupational groups in 10 different departments over 22 months.[1] This period coincided with the 18-month lead-up to the changeover, between March and July, 1982, to a computerised system for processing classified advertising. This new system directly affected the work of 22 telephonist-typists who retrained on computer terminals to record and typeset telephone advertisements. The new system significantly changed the work of 14 other clerical workers in the classified advertising department, and affected the work of occupational groups in a number of other departments whose activities I had monitored during the previous 20 months.

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[1]For details of the methodology see Appendix B.

A number of sociological issues arose out of the fieldwork experience and the literature on the labour process. The issues covered the following aspects of technological change:

1) The process of decision-making about the various production techniques and equipment: who had control over this process, how and why;

2) The experience of profound and rapid technological change: from the point of view of management personnel, supervisors and employees on the shop-floor; and

3) Changes to the skills of particular people: whether and how these skills, or the jobs themselves, had become redundant.

Out of the fieldwork experience I gained an understanding of the conflicts and alliances forged round particular issues of control, job opportunity and skill that were both cause and consequence of the major changes undergone by The Star.

It is impossible to comprehend the sociological implications of these changes without a detailed understanding of both hot-metal and cold-type production techniques, and these are described fully in Chapter 2. Chapter 3 develops an appropriate theoretical framework for analysing changes in the labour process, and, in the concluding section of that chapter, a conceptual guide to the structure of the thesis is outlined. These three chapters complete the introductory part of the thesis which provides the socio-economic, technical and analytic context for the substance of the study.

CHAPTER 2

FROM HOT METAL TO COLD TYPE

1. Introduction

> *The first day we came in after the terminals had been installed it was eerie. There wasn't a sound. It felt like it was Sunday.*

The last of the 40 linotype machines lay silent on the 'composing room' floor.[1] The end of an era had been reached. On May 14, 1980, the hot-metal method of newspaper production at The Star gave way to photocomposition, a cold-type or photographic method of typesetting employing computer technology. These changes transformed the jobs of more than one hundred men and women in the composing room and affected the work of a similar number in related departments.

This chapter traces the changeover from hot metal to cold type at The Star in the context of an historical account of the development of printing. It stands in its own right as a record of change, as well as providing a background to the chapters which follow. While there have always been changes in newspaper printing technology, those which have occurred in the past decade have been the most rapid and radical since movable type was first invented more than 540 years ago (Steinberg, 1955:22). The

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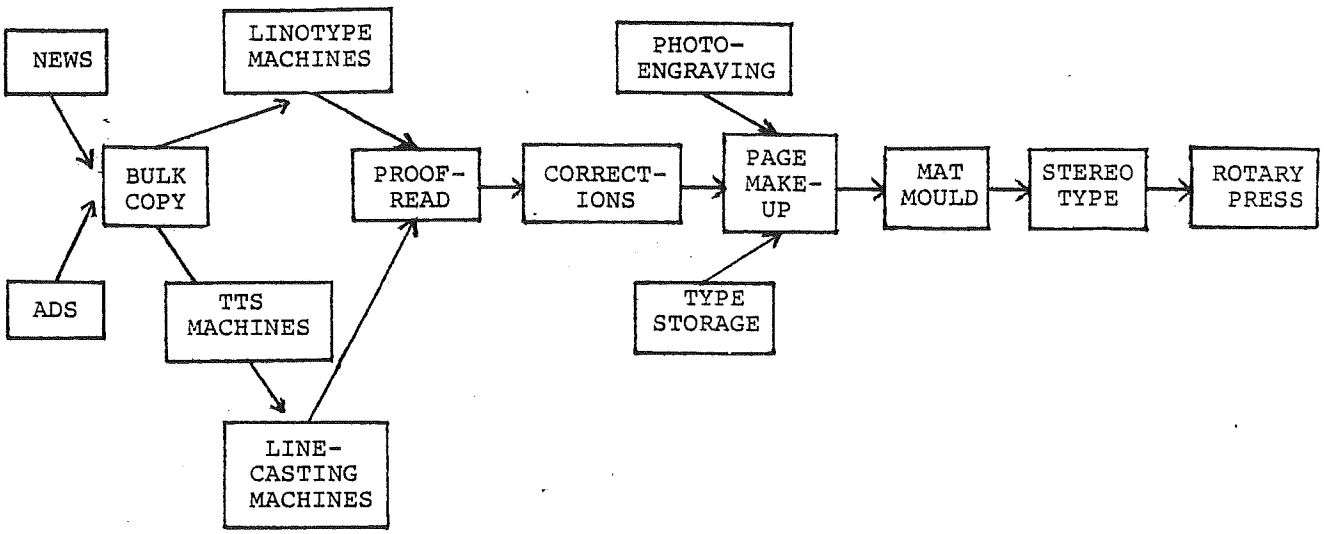
[1] The room in which editorial and advertising material is set in type and composed in columns for subsequent processing into printing plates. The composing room is commonly referred to as the 'comp room'.

production changes at The Star provide a dramatic illustration of the distinguishing features of new technology discussed in Chapter 1: the accelerating rate of change that has occurred following the development and application of micro-processors to a diverse range of techniques.

In order to grasp the nature and extent of the changes - and their consequences for job opportunity, control and skill - the essentials of newspaper production using the old and the new technologies must first be understood. The contrast between the two processes is understood most clearly if one begins historically with the invention of movable metal type and the technique of hand-composition. From this beginning, I trace the development of printing through machine-composition (Section 2) to the radical transformation entailed in photocomposition (Section 3) - that is, the move from 'hot metal' to 'cold type'. In distinguishing between the two processes, I refer to the following key aspects of newspaper production:

(a) production of the type,
(b) construction of columns of editorial material or advertisements from this type,
(c) construction of a page from these columns,
(d) production of a reverse image of the page on a printing plate, and
(e) transference of the image from the plate onto paper.

A simplified diagram of the key stages in each of the two production processes is shown in Figure 1, which summarises the flow of work under hot metal and cold type.



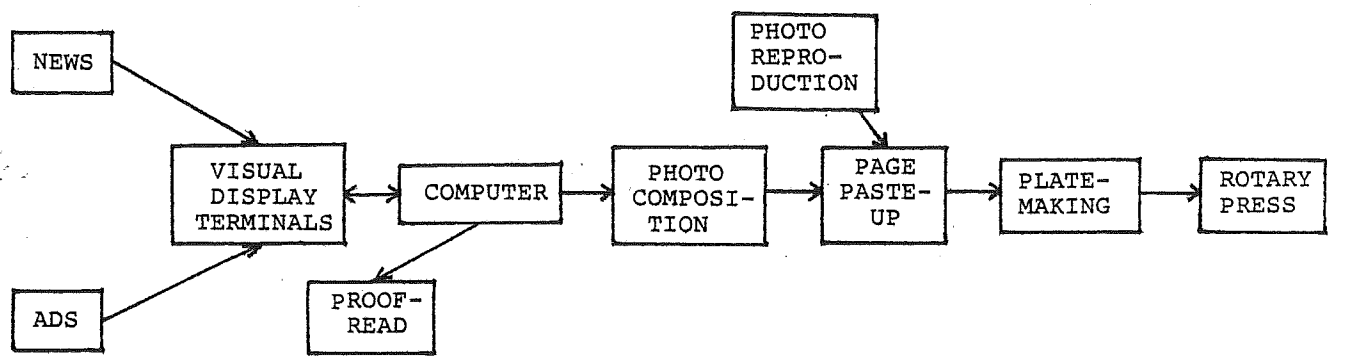


FIGURE 1: FLOW OF WORK UNDER HOT METAL (TOP) AND COLD TYPE (BOTTOM)

A crucial distinction between the old and the new technologies is the difference in the handling of 'hard copy' (that is, copy in paper form) and 'electronic copy' (copy which is processed and stored in the computer). This is discussed in Section 4. In the final section of the chapter I outline events leading to the changeover to cold type at The Star, and the production changes which followed in the two subsequent years. The chapter ends with a brief description of the job redundancies and retraining and relocation of staff entailed in the transformation.

2. Hot Metal[1]

(a) The Production of Type

Before the fifteenth century, scribes copied original manuscripts by hand, a method so time-consuming that it severely limited the number of copies that could be made. The invention of movable metal type in about 1440, attributed to Johann Gutenberg (Steinberg, 1955:22), made the mass production of printed material possible. Until 1975 the production of the newspaper, since its inception 350 years ago, has been based on this principle of movable type, or on techniques derived from it.[2]

The new technology of printing, invented in the fifteenth century, developed from metallurgy and was already practised by goldsmiths and die stampers (ibid.:8).

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[1]The historical and technical information contained in this section has been drawn from Steinberg, 1955; Hagan, 1966; and Smith, 1980.

[2]Smith refers to 1975 as the year in which "the bandwagon of computerization really got going" (1980:12;96).

A single letter, engraved in relief and struck or sunk in brass, provided the 'matrix' ('female die') of that letter in reverse. From this matrix any number of replicas could be cast by pouring molten lead into it (Steinberg, 1955:27). The replica letters were known as 'types'. A complete set of type of a particular style (including both upper and lower case letters, punctuation marks and other symbols) was called a 'fount' or 'font'. The size or height of the type was described by a system of 'point' measurement.

(b) Construction of Columns of Type

The technique of setting type into lines and paragraphs within specified column widths was known as 'composing'. Hand-composing was done by a compositor working at a 'frame'. Type of the required size and fount was divided into compartments in two cases placed one above the other on the frame. The upper case held the capital letters and the lower case, the small letters. To set a line, the compositor held in his left hand a 'setting-stick', or small metal tray, open at one end with a side which could be screwed in or out to the required column width (Plate 1). He picked individual pieces of type from the case and placed them upside down in the stick, working from the left of the line to the right. Each line of type was 'justified' or made up to a line length exactly equal to the column measure. To do this, the compositor ended the line with a word and used pieces of lead between the words to produce even spacing within the line. When this was not possible, he 'broke' or hyphenated the word syllabically. When several lines of type had been assembled in the setting stick, they were transferred to a

PLATE 1: A compositor composing type by hand using a setting-stick and a typecase (right foreground).

larger metal tray or 'galley' in which columns of text were assembled. After a printed image was made from the columns of type, the compositor returned the individual characters of type by hand to the correct compartments of the appropriate type case.

The new linotype machine (Plate 2), invented by Ottmar Mergenthaler in 1886 (Steinberg, 1955:197), combined several key stages of the process of hand-composition. Based on the principle of circulating matrices - brass moulds of the characters of type - the linotype machine mechanised the production and setting of the type, and the systematic replacement of the matrices into compartments after use. The matrices were collected in the machine's setting stick, used to create a line of type or 'slug' in molten metal and then redistributed to a 'magazine' in which they were stored for re-use.

To elaborate, the linotype was operated manually from a keyboard with ninety keys.[1] Touching the key of a particular character automatically released a brass matrix which fell from the individual channel of the magazine containing replicas of that character. As the linotype operator worked through the text of advertising or editorial 'copy', he depressed the appropriate keys and caused a stream of matrices to collect in the setting-stick or tray attached to the machine. Spaces between words were added by hitting the 'space band key' causing wedge-shaped pieces

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[1] Arranged, from left to right, in three banks of 30 keys: lower case, punctuation and numbers, and upper case characters.

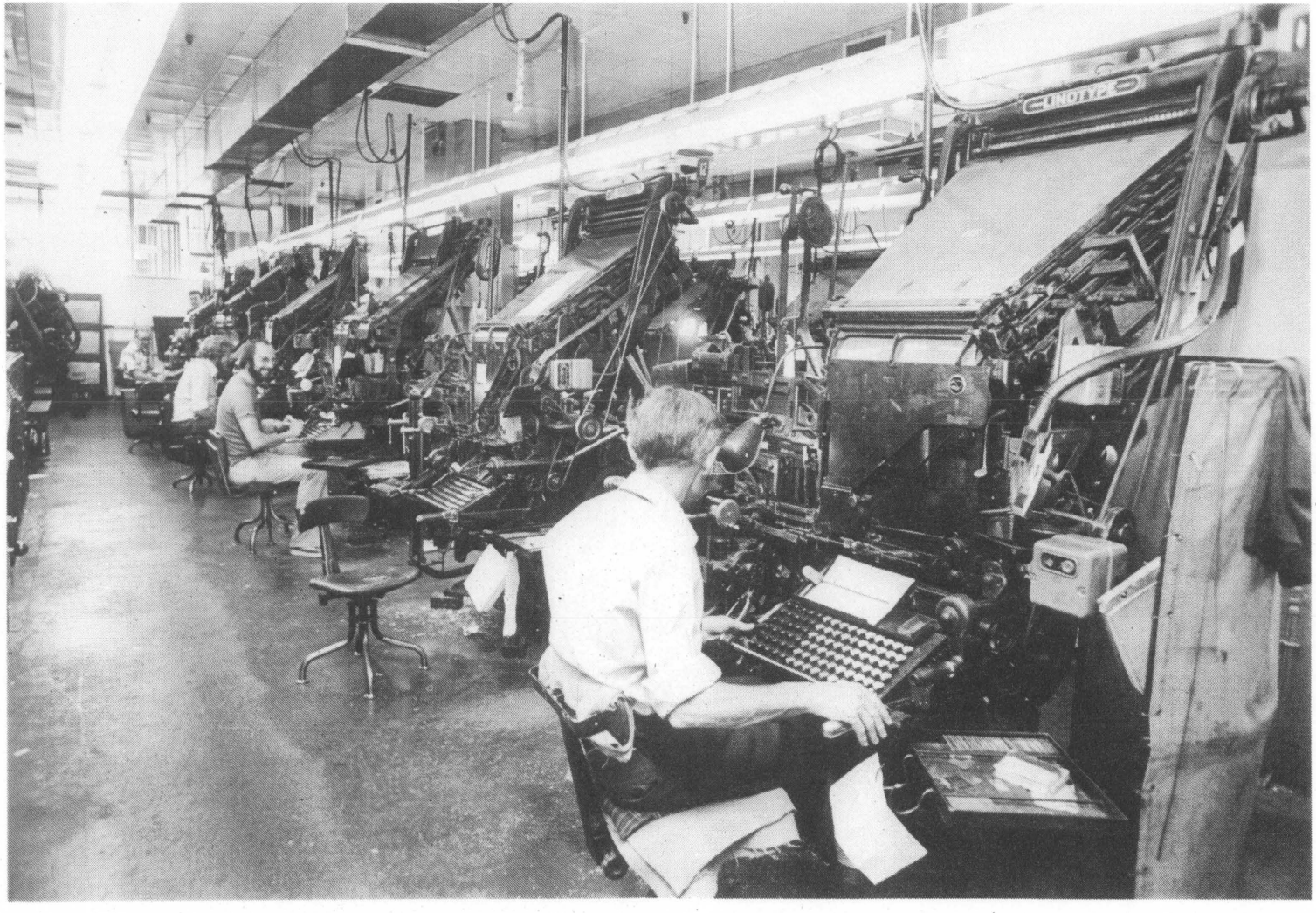

PLATE 2: Linotype operators setting type on linotype machines in the composing room (1979).

of metal to fall between the matrices. These space bands expanded until the line was justified to its proper measure, giving a straight right-hand edge to the column of text - a technique referred to as 'justification'.

When the line was full, the operator moved a lever to transfer it to a casting unit in the machine. Here molten metal was poured over the assembled matrices and spaces, and an image of the letters was formed on the top surface of a precision-cast slug, known as a 'line of type'. The metal was discharged from a pot or crucible in which ingots of an alloy of lead, tin and antimony were heated to a temperature of between 260°C to 275°C. An ingot was suspended by a hook above the pot and lowered automatically as the metal was used up.

The completion of the machine's cycle automatically redistributed the matrices and spaces for storage and re-use. The matrices travelled along a 'disassembly bar' or 'disser' at the back of the machine. When a distinctive set of 'nicks' in the top of the matrix corresponded to the notching above the appropriate channel, the matrix fell into its place in the magazine. After the slug had been used to produce the day's paper, it was melted down and re-cycled.

The machine's automatic selection and redistribution of the matrices after the type had been cast in metal eliminated the time-consuming work of the hand-compositor and significantly raised productivity. Nevertheless, the technology represented a speeding-up of existing techniques, not a change in technique. Since the invention of the

linotype, the only significant technological change made to typesetting - until the development of photocomposition - was the post-World War Two invention of automatic linecasting and teletypesetting machines.

Linecasting machines were similar in design to the linotype but did not require manual operation of the keyboard (Plate 3). Instead, the linecaster was driven by pre-coded or punched tape produced by keyboard operators using a teletypesetting or TTS machine (Plate 4). Teletypesetting machines were specially adapted typewriters which punched a pattern of holes in paper tape. Unlike the linotype, they had a 'qwerty' keyboard[1] with a layout of keys similar to that of an ordinary typewriter. In the early stages of teletypesetting, the TTS operator hyphenated and justified the copy before the tape was fed into the linecasting machine. Following the development of the first generation of computers in the 1960s, the hyphenation and justification (H and J) operation was carried out by a computer program. The unjustified material on the tape was fed into a computer using a paper tape reader and converted into a justified paper tape. This tape was fed into the linecasters which automatically converted the stories and advertisements into metal.

(c) Construction of Page from Columns

After linotypes came into use, the metal page was formed from galleys of lines of type instead of individual

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[1] So named after the first five letters of the top line of alphabetical keys on a standard typewriter keyboard.

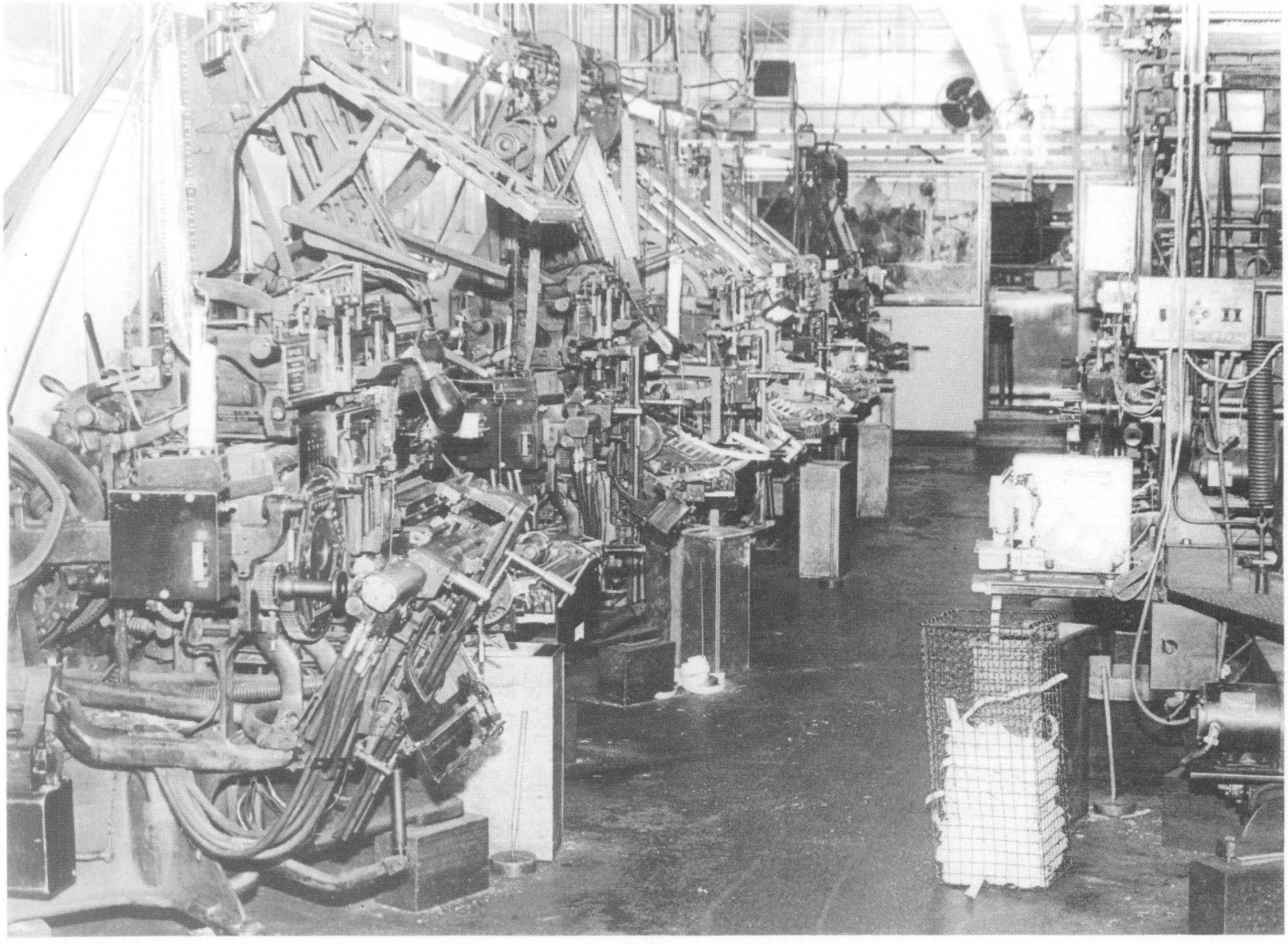

PLATE 3: Automatic linecasting machines driven by punched paper tape. (Used tape in basket right foreground.)

PLATE 4: The TTS room in the 1960s showing TTS operators creating punched tape from copy (on frame above keyboard). The tape was used to drive automatic linecasting machines (see Plate 3).

characters (Plate 5). When the galleys were complete, proofs were taken and sent to proof-readers. These 'galley proofs' were read for 'literals' (or spelling mistakes), and for grammatical, legal and other errors. The proofs were then sent back to the composing room for correction. This entailed re-casting the line in which the error had occurred, removing the offending line and replacing it with the corrected slug. Corrected type, assembled in galleys, was transferred onto the 'stone' or table on which the metal page was 'made up' by the 'stonehand'[1] (Plate 6). When the page was completed the stonehand locked it into place by using a system of wedges and a frame called a 'chase'.

All the editorial and advertising material for a particular page was made up according to a 'layout' or 'dummy' supplied by a sub-editor.[2] This layout indicated the correct position and size of photos, advertisements and each item of news copy (including headlines and the 'cross-heads' dividing up the body of the text). Thin metal strips, inserted vertically by the stonehand, separated the columns. Similarly, metal strips or 'rules' were inserted horizontally to separate different items in the page. The metal page had to fit together when 'locked up' so that no type or 'photo-engraved blocks'[3] could be dislodged. When gaps

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[1] A term often used interchangeably with the term 'comp' or 'compositor'. The distinction is clarified in Chapter 7.

[2] Layouts are determined in part by the amount and shape of advertising material to be used on particular pages. Once advertisements have been allocated space, editorial material is arranged in the remaining area.

[3] See following paragraph.

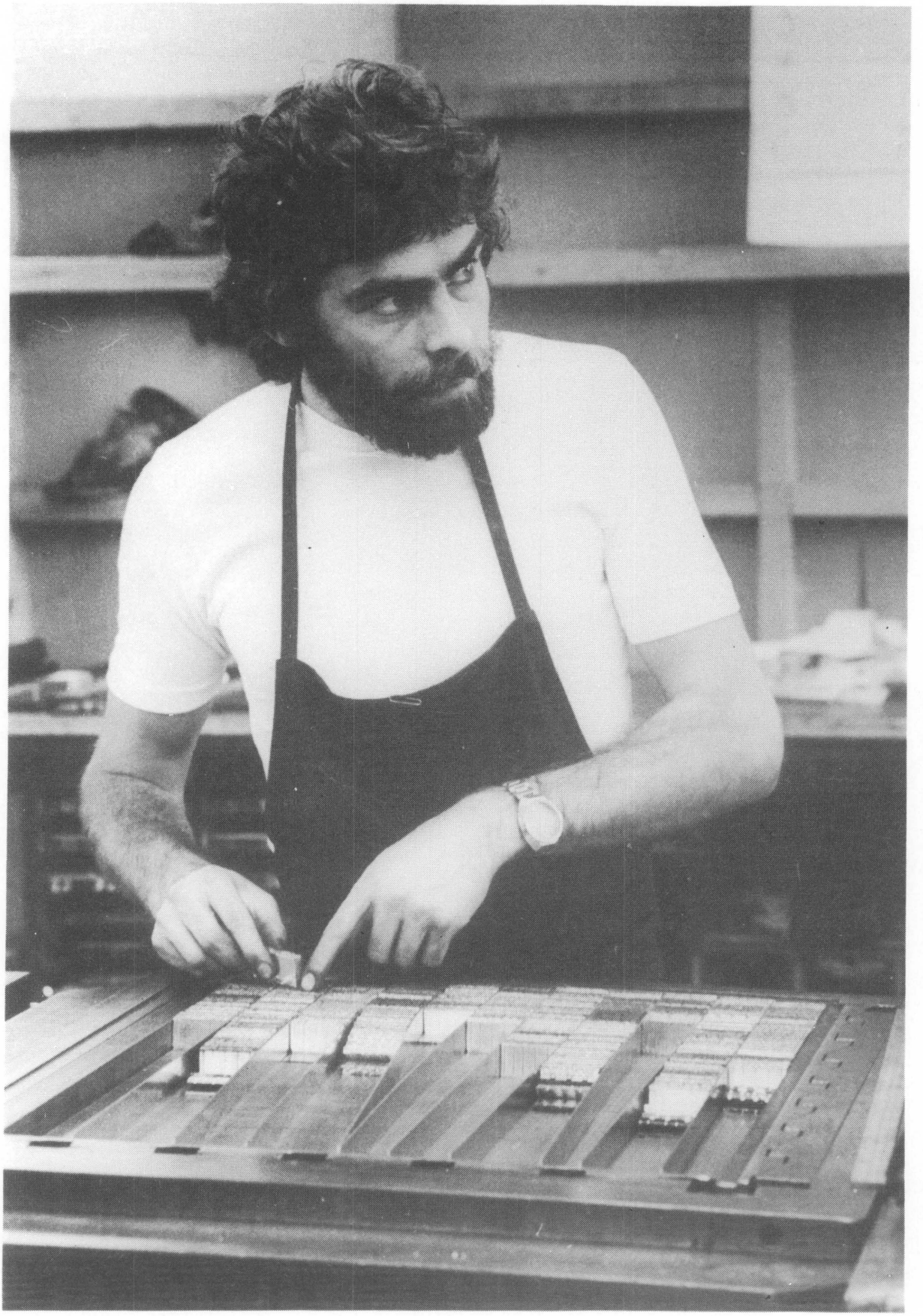

PLATE 5: A compositor assembling slugs of classified advertising in galleys.

PLATE 6: View of the composing room showing stonehands making up the pages.

occurred, the stonehand inserted pieces of metal, or 'quads', into the page to ensure a tight fit. The completed page (Plate 7), locked in the chase, was wheeled on a trolley across to the stereotyper who made the printing plate (see below).

Lines of type of editorial and advertising copy were the main raw materials with which the stonehand worked in making up the page. He also used printing blocks on which photographic images and drawings had been engraved using an acid-etching technique known as photo-engraving. This work, performed by photo-engravers, involved three key stages: a large camera was focused to the size the photograph would appear in the paper, and a photograph taken. The negative was then printed onto a light-sensitised zinc plate. Finally, acid was used to etch the image onto the plate in an arrangement of thousands of tiny dots.[1]

(d) Construction of a Plate to Fit the Press

The stereotyper converted the flat metal page into a curved metal plate that could be clamped on to the printing cylinder of a rotary press (Plate 8). First he made an imprint of the page - now referred to as a 'forme' - from a thin, tough, laminated sheet known as a 'flong'. The flong was placed on the forme and, under tremendous pressure (2000 lbs to the square inch[2]), converted into an

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[1] The photo-engraving process is described more fully in Chapter 6.

[2] 13,790 kPa.

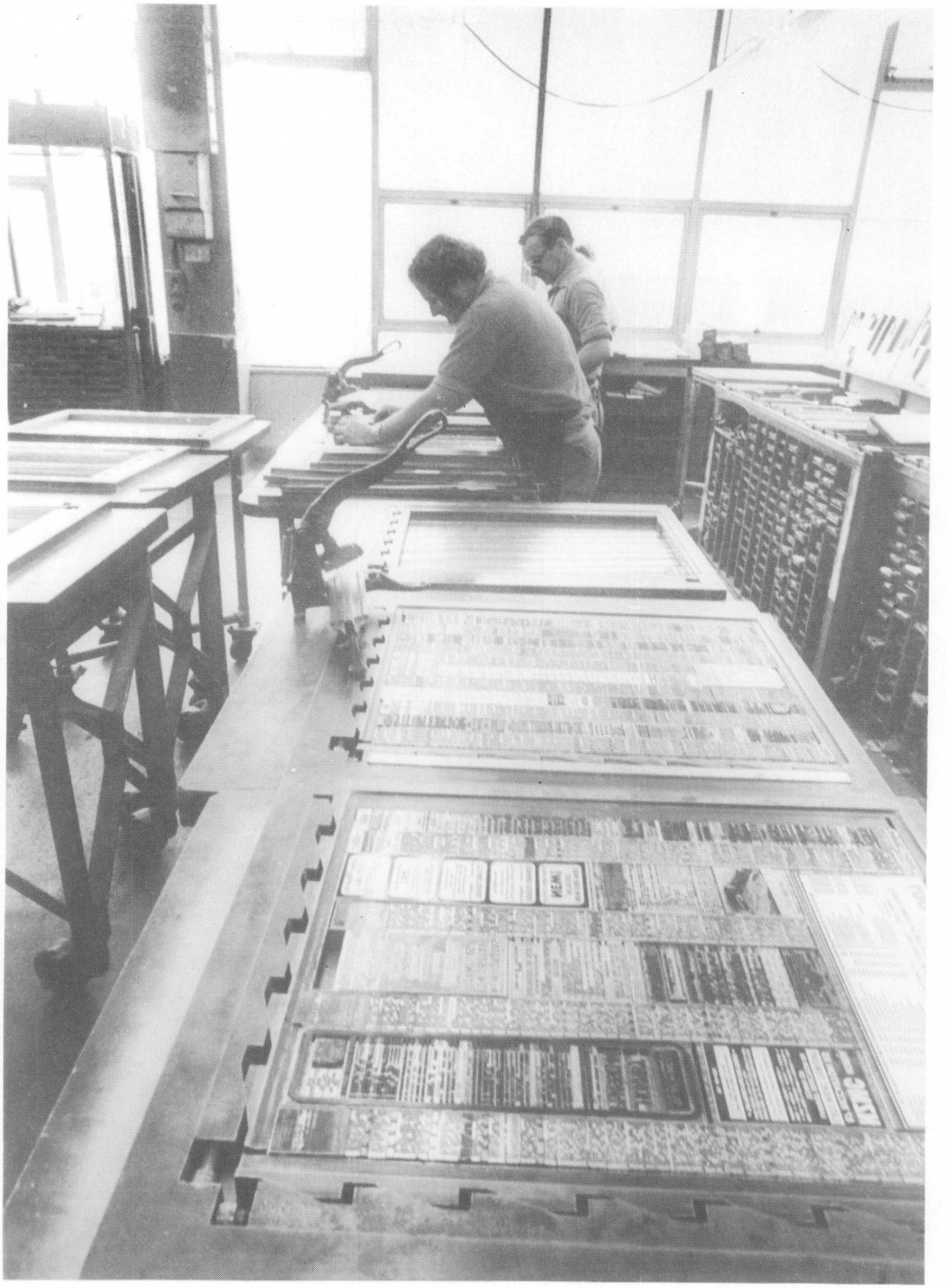

PLATE 7: Metal pages awaiting final completion prior to plate production. Note the chase, or frame, used to lock the page into place.

PLATE 8: Curved metal plates being fitted onto the rotary press.

embossed card called the matrix. This, in turn, was placed in a 'caster' which curved it to the exact shape of the cylinder. Then it was moved into the casting box and molten metal pumped in to form the curved printing plate.

(e) Transference of Image to Paper

With the hot metal process, the printed image of the newspaper was typically produced by a 'letterpress' method. The raised surfaces of the type and the photo-engraved blocks were covered in ink, and the paper pressed onto them at speed as the presses rolled.

3. Cold Type

(a) and (b) Production and Setting of Type[1]

Computerised typesetting, or cold-type production, differs radically from that of hot metal. The image of the page is created photographically, instead of physically in metal type. Molten metal is completely eliminated from the composing room. At the centre of production is the main computer or central processing unit (CPU) which stores the copy digitally in its memory[2] rather than physically as galleys of metal type in the composing room (Plate 9). This photo-electronic method of typesetting employs the capacity of the computer to input, store and manipulate text and to control photosetters.[3] In brief, a computer

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[1]This information has been drawn from The Inkspot, March 1979; special feature, The Star, May 14, 1980; and from fieldnotes.

[2]For technical details see Appendix A.

[3]A photosetter is a computer-controlled machine capable of setting type at a speed of 2600 newspaper lines per minute. See below and Plate 9.

PLATE 9: The computer room showing central processing unit and disk drives (right) and console (left foreground). The photosetter is the partly obscured cabinet in the background.

program 'understands' and acts upon coded instructions.[1] An operator 'keys' or types these instructions, and the accompanying advertising and editorial copy, into a visual display terminal (VDT) (Plate 10) which is linked ('on line') to the central computer.[2] This information is subsequently transmitted to a photosetter which photo-electronically sets and composes the type according to the specified typesetting instructions - a process referred to as photocomposition. From the photosetter the material goes through a processor and emerges, typeset in correct column widths, as artwork on photographic paper.

To explain the process of photocomposition in more detail, 'computer commands' - or pre-coded sets of type-setting instructions entered by the VDT operator - are referred to as 'mark-up'. Mark-up is a 'bunch' of commands detailing, for a particular piece of text, its exact location, column measure and font size and type. The justification of this text, through the hyphenation of words and their equal spacing in the line, is controlled entirely automatically by the computer program and not line-by-line by the linotype operators, as was the case with hot metal.

The hyphenated and justified text and mark-up instructions, in electronic form, are transmitted to a photosetter. As an electronic signal is received by the

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[1]The question of the degree of control exercised over the work task by the operator is a central issue in this thesis, and is dealt with fully in subsequent chapters.

[2]For further details see Appendix A.

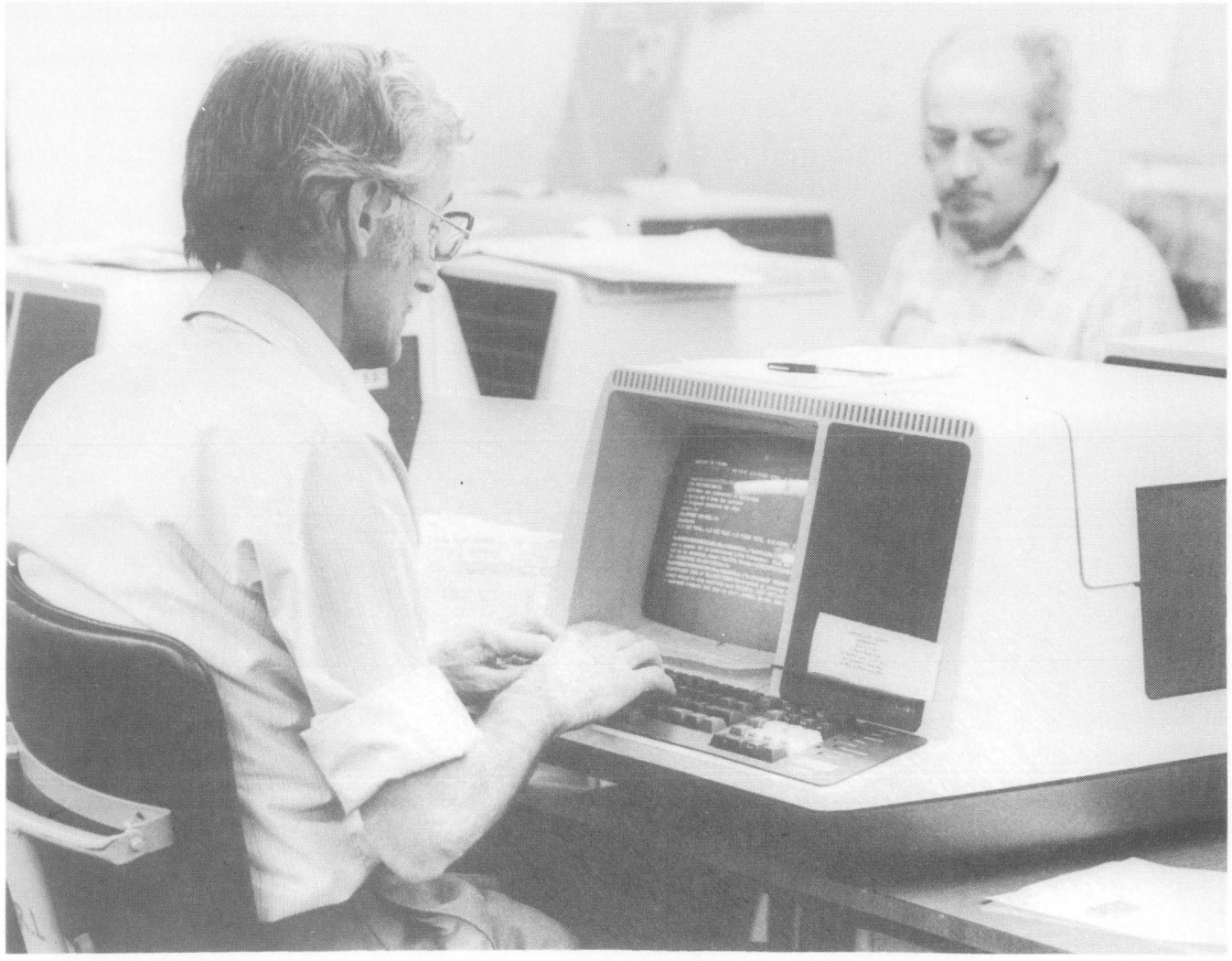

PLATE 10: A VDT operator seated at a computer terminal, setting type. Note: The equipment was crowded into temporary accommodation while the terminal room was under construction.

photosetter, light is projected through a lens onto light-sensitive paper and strobes up and down a grid pattern to form each character as the signal continues. (The principle is similar to that used to produce a television picture.) During this process the individual characters of type are photographed at high speed in their correct position, determined according to the mark-up instructions accompanying the text. When the film is developed on photographic or 'bromide' paper, copy emerges composed as justified text set to the correct column width and indented or tabulated where required.

(c) Construction of Page from Columns

Columns of copy on 'bromides' are distributed to the compositor ('comp') responsible for making up the particular page on which the copy is to appear. As was the case when composing the page in metal, the comp follows the half-scale pencilled layout drawn up by the sub-editor, but - rather than manipulating metal - he uses a scalpel to cut stories from the columns of bromide paper which he waxes and sticks onto a page-size layout sheet.[1] This process is known as 'paste-up' (Plate 11). If errors have been made in judging the amount of editorial material needed to fill particular columns, the comp can increase or decrease the space between lines or paragraphs accordingly by cutting the copy as instructed by the 'stone sub'[2], and

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[1]This is how the process is currently done at The Star. A new technique, known as 'pagination', has been developed which enables pages of copy to be composed on a video screen - a technique which by-passes the paste-up stage.

[2]The sub-editor assigned to work alongside comps as edition deadlines approach.

PLATE 11: A compositor pasting-up the front page of The Star.

moving it to fill the required space in a manner which is typographically acceptable. Photographs and illustrations are also produced as bromides and incorporated in the page layout in a similar manner.

(d) Construction of a Plate to Fit the Press

To produce an image of the page of paste-up copy in newsprint, an ink-receptive surface is needed. Unlike the hot-metal process where the image and non-image areas are at a different height, the surface of the page is flat. Without prior treatment of the plate, ink would adhere to its entire surface. The treatment can be achieved in a number of ways. The Star chose the photolithographic technique - a technique based on the fact that oil and water do not mix.

To create the printing plate, a 'giant Brownie camera' (Plate 12) makes a photographic image of the page of paste-up. This image is processed automatically and the negative placed on a light-sensitive, flexible, aluminium plate. The image of the page is then exposed to ultra-violet light. The light, passing through the negative, hardens the exposed area, and in the succeeding stage of the process the unexposed area is washed away automatically. The plate is then developed automatically, by which stage the image of the paper has been fixed on the aluminium plate. This is then curved and clipped onto the cylinders of the rotary press.

(e) Transference of Image to Paper

Before these plates could be used, The Star's rotary

PLATE 12: The paging camera, or 'giant Brownie', used to produce an image of the page after it was placed under the glass frame (centre) and the frame was rotated 90°. The attached dark-room and processor are shown in the background.

press had to be modified for the 'direct lithographic' or 'di-litho' method of printing in which ink, when washed across the plate, adheres only to the light-hardened exposed area which becomes the printing surface. When the press is rolling, the supply of ink and water have to be monitored continuously to ensure a sharp, legible, printed image. Monitoring is done by 'machinists', while a 'driver' takes charge of the control unit which drives the press.

4. Copy for Typesetting

Newspaper copy prepared for typesetting is divided into two main areas of production: advertising and editorial. Typically, advertising material printed in a newspaper falls into two major categories, 'display' and 'classified' copy. 'Display ads' are those which, as the name suggests, provide a significant display of the advertising material and may occupy several columns, or indeed fill the entire page. Traditionally, display ads were made up from a combination of type produced by linotype or Ludlow machines[1], and photo-engraved zinc blocks. In the late 'sixties and early 'seventies, the forerunner to fully computerised phototypesetting equipment[2] was

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[1] Larger headlines were set by hand-assembling each matrix in turn then casting the completed line in metal in a machine called a Ludlow.

[2] Cold-type production was developed in two distinct phases: the first was the shift from hot metal to a photographic principle, the second entailed the conversion to a fully electronic process. The photo principle arrived when the tape-driven hot-metal linecaster (see p. 32) was replaced by a tape-driven photosetter, using a film negative of the alphabet to produce type on bromide paper (Cockburn, 1983:61-62).

installed in newspaper offices in New Zealand, as in other parts of the world. Retrained linotype operators created display ads on keyboard machines which had associated video screens. The machines used text from punched tape (prepared on TTS machines) as the basis of this new photo-composition process. The operator used the keyboard to manipulate the size and position of characters of type displayed on the screen - rather than forming the ad from metal type. The ad, when photocomposed and processed, was then converted into a photo-engraved printing block.

For technical reasons, classified advertising continued to be produced entirely in hot metal. Galleys of type of classified ads, arranged in alphabetical order in the correct classification, would be systematically built up over the days and hours preceding publication. Thus, as new ads were received from customers, the copy was set in metal by the lino operators and inserted into the galleys by the comps. Advertisements which required multiple insertions were extracted from the column after the day's 'run', and held in store for subsequent use on the appropriate day.

Classified copy is divided into what are referred to as 'spaced' or 'space ads', and 'run-ons'. Spaced ads (Figure 2(a)) are those advertisements in which the headings and text are centred, tabulated and spaced according to typographical principles learned in trade training. The aim is to produce an eye-catching advertisement in the space purchased by the customer. 'Run-ons' (Figure 2(b)) are just that. They are ads which have no horizontal

(a)

WAIKATO DAIRY CO-OPERATIVE LTD.

ASSISTANT CHEESE FACTORY MANAGER

Applications are called for the above position within the company's new cheese manufacturing complex now under construction at Hautapu.

This fully automated unit is designed for a capacity of 18,000 tonnes of cheese and is programmable for the manufacture of Cheddar, Colby, Egmont and Cheshire cheeses.

Hautapu, site of the company's multi product complex, that will be further extended with the completion of the cheese factory, is situated just 3km north of the prosperous central Waikato town of Cambridge which offers excellent educational as well as sporting, recreational and cultural facilities and is itself within 20 minutes of Hamilton City.

This position offers exceptionally good career prospects for the right applicant, and carries with it appropriate benefits that will be discussed at interview.

Applications close on March 28th, 1983. Personal particulars and qualifications together with contact phone number and copies of testimonials should be forwarded with applications to:

THE PERSONNEL OFFICER

WAIKATO DAIRY CO-OPERATIVE LTD
P.O. BOX 490,
CAMBRIDGE.

All applications will be treated in strictest confidence.

(b)

★ ★ ★

WHEEL Alignment. Tyres are very expensive, make sure yours are not scrubbing and you are getting the full life out of them. Contact the experts Wheel Alignment and Balancing Service, Doug Smith Panel Beaters, 418 Tuam St. Ph. 791-637.

(b)

SPORTS shop in prime location, good lease and low rental, reluctantly offered for sale due to personal circumstances. Goodwill $5000. Stock and plant at valuation. Genuine enquiries only write Star 25038.

(a)

CAR SALES YARD PERSON
PART TIME

We require the services of a person on a part time basis for the following duties: Washing new and used vehicles, picking up and delivering vehicles and other relevant duties.

This position would suit semi retired person with a mechanical knowledge who lives in our area.

Apply in writing to:

THE SALES MANAGER,

RHODES DATSUN,

334 RICCARTON ROAD,
CHRISTCHURCH.

(a)

MANAWATU CATCHMENT BOARD
AND REGIONAL WATER BOARD

TECHNICAL OFFICER
(Water)

THE BOARD REQUIRES the services of a suitably qualified and experienced officer to co-ordinate information and prepare reports on regional water board activities.

TECHNICAL OFFICER
(Engineering)

The board requires the services of a suitably qualified and experienced officer to co-ordinate information and prepare reports on catchment board activities, with particular emphasis on shingle resource studies.

The successful appointee will be required to reside in Palmerston North.

Conditions of appointment and schedule of duties may be obtained from the undersigned.

Applications close Monday, March 28, 1983.

P.O. BOX 2043, PALMERSTON NORTH

C. G. BROUGHAM,
CHIEF ENGINEER.

FIGURE 2: Examples of different types of classified ads. (a) space ad; (b) run-on ad.

spacing between headings and the text, nor vertical spacing within the body of the ad, but simply 'run on' in the columns. Typically, the first word of the ad will be in bold type for greater visual impact.

Classified ads originate in several forms: hand or typewritten by customers and lodged at the 'front counter' or sent by mail; telephoned to typists who use head-sets to speak with the customer, and typewriters to record the ad on a printed form; and brought in by sales staff who solicit material from local businesses. Advertisements which originate in these different ways, on some form of paper, are referred to as 'hard copy'.

Editorial material originates as hard copy from the typewriters of journalists employed by the newspaper itself, and from teleprinters which transmit news and feature articles from syndicated news sources. After the copy is edited by the subs, a task known as 'subbing', it is sent to the comp room for typesetting and composing.

With hot-metal production, editorial and advertising copy undergoes two distinct stages of processing. First, the material is recorded in hard copy as previously described. In the second stage - typesetting and composition - the same material is re-typed or 're-keyboarded' by linotype or TTS operators, converted into hot metal and composed in columns in the metal page.

Computerised typesetting and photocomposition techniques enable classified advertising and editorial copy to be typeset at the <u>first</u> stage - a process referred to as 'capturing the initial keystroke' or 'direct-inputting'. Classified advertising received from customers over the

telephone can be keyed into a computer terminal, the text stored and subsequently manipulated, and 'outputted' for printing.[1] At the same time that the ad is received, typesetting instructions can be inserted into the text to enable the material to be set and composed in print without further handling. In a similar process, typesetting and composing instructions can be inserted into the text of editorial material as the journalist is writing the story.[2]

5. Production Changes at The Star

The Star's fully computerised, $1,250,000, production system came into operation on May 14, 1980. The lead-up to the changeover began about 1975. The Board of Management of NZ News made the initial decision to introduce new technology into its two metropolitan dailies, as traditional suppliers of conventional hot-metal equipment in the United States progressively closed down this part of their operation and moved into producing computerised systems.[3] The Auckland Star was first to change when it purchased and installed a Linotype Paul System V in 1978. A small group of people at The Star, with technical and production expertise, considered the various alternatives available in the light of the particular requirements of that newspaper. In December 1977, letters were sent to six

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[1] This process is discussed in detail in subsequent chapters.

[2] See the preceding footnote.

[3] Motivation for the changeover is discussed more fully in Chapter 4.

computer companies asking them to tender for the proposed system. Lengthy submissions were received early in 1978 and were studied and evaluated all that year. The Star's Production Manager, accompanied by the Chief Engineer of NZ News, went to the United States in October for an in-depth investigation of the most suitable systems. In December 1978, an order for the new production system at The Star was placed with Digital Equipment Corporation (DEC) for delivery in June 1979. The equipment was installed soon after that date, and modification and testing of the new system, and retraining of staff, was carried out in the months leading up to the May 1980 change-over.

I have shown that the new computerised system transformed or eliminated the techniques of hot-metal typesetting and composing, photo-engraving and hot-metal plate-making. With the initial phasing out of hot metal in 1980 therefore, the following processes became obsolescent: typecasting using linotype machines, line-casters and Ludlows; photo-engraving; the hand-composing of metal; and plate-making in hot metal. In addition, since hot-metal typesetting equipment was no longer in use, maintenance of the machinery was not required. Two departments, 'lino-mechanics',[1] and 'stereo',[2] ceased to exist and the staff (9 and 13 respectively) took voluntary

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[1] Handling maintenance of hot-metal machinery.

[2] The department in which the stereotypers made the curved metal plates.

redundancy or were redeployed.[1] Staff in all other departments affected by changed production methods were retrained, or were redeployed.[2] Figure 3 lists the main departments and occupational groups affected by the change to cold-type production.

An ex-comp, selected to retrain as manager of the computer room, was sent to The Brisbane Courier-Mail to gain experience with the new production system. Four ex-linotype operators and comps were selected for extensive retraining as computer system controllers. These five, together with a person with a background in computer science, adapted the software[3] of the new computer system to The Star's particular requirements. At the same time other key staff - including the deputy chief sub and chief reader - underwent training. In turn they retrained the sub-editors and readers in their respective departments so that they could use the new system of computer coding in subbing and proof-reading.

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[1] Details of negotiations over redundancy payments, and the demarcation dispute between stereotypers and photo-engravers over the new plate-making work, are discussed in Chapter 5.

[2] It is very difficult and perhaps misleading to summarise - in table form - the various changes which occurred in the jobs of different occupational groups, for two principal reasons: 1) As subsequent chapters will show, the fieldwork describes an ongoing process of change rather than documenting the results of a 'before and after' study. A significant number of employees in several occupational groups underwent a series of changes to their jobs over the period between 1979 and 1982. 2) This period coincided with a significant downturn in the New Zealand economy - a time when employers typically shed labour through 'natural attrition' regardless of changing technology (see Chapter 4). Notwithstanding this, the implications of the technology for labour-saving, and its actual impact at The Star, are discussed fully in the chapters that follow.

[3] See Appendix A.

HOT METAL[1]

CLASSIFIED ADVERTISING*
Phone Ad Takers
Charging Clerks
Copy Checkers

COMP ROOM[Ø]
Lino Operators)
Compositors) ∇
TTS Monitors)
Lino-mechanics)
Stereotypers)
TTS Room[∞]
- TTS operators

PHOTO-ENGRAVING[#]
Photo-engravers

COLD TYPE[1]

CLASSIFIED ADVERTISING
Tele-ad operators[Ø∞]
Copy checkers*

COMP ROOM[Ø]
VDT operators) ∇
Comps (paste-up))
TTS operators[∞]

COMPUTER ROOM[Ø]
Analyst/Programmer) ∇
System Controller)

PLATE-MAKING[#]
'Photo-engravers'

COMMON TO BOTH[2]

EDITORIAL[+]
Journalists
Sub-editors

READING ROOM[+]
Readers

COLD TYPE DEPT[Ø]
Operators) ∇
Comps (paste-up))
Operators[∞]

ROTARY[Ø]
Machinists[∇]

FIGURE 3: List of main departments and occupational groups affected by change to cold-type production. (Substantial changes[1], Some changes[2].) (Union affiliation: Clerical Workers' Union*; Journalists' Union[+]; Photo-engravers' Union[#]; Printing Union[Ø] - printing tradesmen[∇], non-journeymen[∞].)

During 1979 each of the nine units from the rotary press was sent to Auckland for copper-plating as part of the conversion to the di-litho method of printing (described earlier). The foreman and deputy foreman were sent to the Auckland Star to receive training in the new method, and subsequently retrained others in the rotary department.

During the transition there was a period of about four weeks of parallel operation when both hot-metal and cold-type systems were running. In this phasing-in period, the four 'Community Newspapers' published by The Star went over to cold type, while the daily and weekend papers were produced under the old system.

During the period leading up to the change, about 26 linotype operators were retrained as VDT or terminal operators.[1] The first group began training on IBM typewriters in March 1979. This gave them the skills needed to operate a qwerty keyboard. After the new terminals arrived, the operators, in groups of six, began learning about the computer system itself and the command codes they required for typesetting.

Prior to the changeover, about 37 ex-comps and stonehands retrained in the paste-up process. Since 1981, 19 of these men have undergone further retraining to operate computer terminals.[2] (A similar number of former linotype operators has retrained on paste-up.) With photo-

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[1] Estimates vary between 24 and 27.

[2] Others have undergone retraining in the period since I completed fieldwork in March 1983.

engraving now obsolescent, seven photo-engravers took over the new process of plate-making using photo-lithographic techniques.[1]

The initial change from hot metal enabled editorial and advertising material to be typeset and composed electronically[2] once it had been produced as hard copy. Journalists used conventional typewriters to type up their stories for computerised typesetting by the VDT operators. This two-stage process was repeated for classified advertising: telephoned ads were typed using typewriters and this hard copy was sent to the composing room. All classified advertising was set in alphabetical order within the correct classification under a CM11 system.[3]

As I indicated briefly in Chapter 1, during 1981, and more particularly, early in 1982, The Star began phasing in a Classified Management System (CMS) in which a significant proportion of advertising copy originating from telephone calls could be keyed directly into a terminal and typeset without further keyboarding by VDT operators. This system of direct-inputting involved retraining or relocating about 35 people in the classified advertising department, front office, and accounts staff. Twenty-two telephonist-typists retrained on terminals. The jobs of 'charging clerks', and 'ad checkers' became obsolescent, and staff were

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[1]Not all of the photo-engravers' former trade skills became obsolescent, nor all of their former jobs: for example, they still have to make negatives of photographs which have to be reduced or enlarged to the required size. This is discussed more fully in subsequent chapters.

[2]Under a 'Text Management System' referred to as TMS.

[3]The initials stand for 'Classified Management System II', the name of the software package supplied by DEC. (This system is described fully in later chapters.)

redeployed. In the accounts department a number of jobs were no longer required, and staff were retrained and redeployed.

At the point of changeover from hot metal to cold type the TTS department continued to function even though the linecasting machines had gone. Nine 'TTS girls'[1] continued to produce punched tape, the text of which was now fed directly into the computer for phototypesetting. Corrections to the copy were made by the ex-linotype operators, using the visual display terminals. In 1982, when the new CMS system came on line, the TTS operation was made obsolete and it has been gradually phased out. Staff remaining have been retrained or relocated.

In this chapter I have discussed production changes at The Star in the context of the historical development of printing. In the following chapter I use Braverman's work (1974) as a frame of reference to document and account for the social process of change at The Star, which I have summarised in the preceding pages, and to extend the theoretical analysis of the labour process.

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[1] 'TTS girls' was the name frequently used to refer to the women who operated TTS machines. The significance of the term can be understood in the context of the analysis of labour process and gender in subsequent chapters.

CHAPTER 3

THE THEORY OF THE LABOUR PROCESS

This chapter briefly reviews the main tenets of Braverman's theory of the labour process and examines relevant criticisms published before fieldwork commenced in 1980. A set of research questions generated by this review guided initial fieldwork, and these are summarised in Section 3 of the chapter. The concluding section shows how events in the field, together with more recent criticisms in the literature on the labour process, modified the theory and shaped subsequent fieldwork.

1. Labor and Monopoly Capital

In Labor and Monopoly Capital, Braverman provides an account of the systematic degradation or deskilling of work in the twentieth century. He argues that deskilling occurred as capitalists sought and gained effective control over production by divesting workers of their craft skills and knowledge. Capitalists achieved this by organisational and technical means: re-organising production and supervision according to principles of scientific management and deploying modern machinery and techniques which embodied the workers' former skills and knowledge.

Braverman's account of the transformation of work during this century begins with the central characteristic of a capitalist economic system: the drive to accumulate capital. When the capitalist buys buildings, materials,

tools and machinery, he can "evaluate with precision" their role in the process of capital accumulation, but when he buys labour power, the outcome is much less predictable (Braverman, 1974:57). Since the relations of production in a capitalist system require the worker to sell his labour power to the capitalist, the worker surrenders his interest in the labour process (ibid.). In this setting of antagonistic social relations, workers cannot be relied on to work in the best interests of capital. To realise the full potential of labour power - to maximise the productivity of labour - the capitalist needs to be able to control the manner in which work is performed. Under capitalist production, therefore, it is essential for the employer "that control over the labour process pass from the hands of the worker into his own" (ibid.:58). According to Braverman, this need to achieve control over the labour process explains the transformation of work under monopoly capitalism in the twentieth century.

Historically, production was carried out under the immediate control of craftsmen, in whom traditional craft knowledge and skills were embodied. As Braverman shows, in the early phase of industrial capitalism when "putting out" and sub-contracting still prevailed, the capitalist controlled labour "in the same way he bought his raw materials: as a definite quantity of work, completed and embodied in the product" (ibid.:60). The speed and hours of work, and the traditional craft methods by which tasks were accomplished, remained under the control of craftsmen sub-contractors. To render the labour process independent

of craft, tradition, and the workers' knowledge and to concentrate it in the hands of management, capitalists transformed the labour process from one based on skill to one "based upon science" (ibid.:113, 120-121).

Foremost in this transformation was the application of a system of scientific management to production. Its principal exponent was Frederick Winslow Taylor. The basic precepts of Taylor's theory - which he developed round the turn of the century - can be summarised in the following way:

> *Workers who are controlled only by general orders and discipline are not adequately controlled, because they retain their grip on the actual processes of labor. So long as they control the labor process itself, they will thwart efforts to realize to the full the potential inherent in their labor power. To change this situation, control over the labor process must pass into the hands of management, not only in a formal sense but by the control and dictation of each step of the process, including its mode of performance. (ibid.:100)*

Braverman argues that modern management came into being on the basis of three key principles derived from this theory (ibid.:112-121):

1) The labour process should be made independent of the skill and discretion of the individual worker.

2) Work must be separated into two distinct components, which Braverman calls 'conception' and 'execution'. The former, involving the design and co-ordination of production, must be divorced from the latter so that the work tasks specified in the planning process are carried out by a separate group of workers on the shop floor.

3) Managers should use their monopoly over the knowledge that application of the two previous principles gives them "to control each step of the labor process and its mode of execution" (ibid.:119).

The application of scientific-technical innovation to production in the early part of the twentieth century completed the transformation of the labour process. Applying scientific management principles, the capitalists had fragmented the tasks performed by a single craftsman and returned the craft to the workers piecemeal so that the process as a whole was no longer comprehended by them. The scientific-technical revolution was then harnessed by management to grasp the process as a whole and control every element of it (ibid.:170-171). According to Braverman (ibid.:171), "this is the ideal toward which management tends, and in pursuit of which it uses and shapes every productive innovation furnished by science" (ibid.:171).

Since machines can be paced and controlled according to centralised decisions rather than by decisions made at the production site, and these controls can be in the hands of management, machinery allows management to accomplish by wholly mechanical means what had previously been attempted only by organisational and disciplinary means (ibid.:195). Braverman argues that these technical possibilities interest management as much as the fact that machines enhance the productivity of labour (ibid.). In his words,

> *not only does machinery have the technical function of augmenting labour productivity, therefore, but, under a capitalist system, it divests the mass of workers of their control over their own labour. (ibid.:193)*

Furthermore, as well as divesting workers of control - deskilling their jobs - increased mechanisation makes some jobs obsolete as automation replaces human effort altogether.[1] Thus, as technological change occurs, workers' skills and possibly their jobs become redundant.

Restructuring labour processes by combining scientific-technical innovation with Taylorism leads to a rigorous division and sub-division of labour which - by substituting unskilled for skilled labour - cheapens the overall price management has to pay for labour power, as the "Babbage principle" shows.[2]

In summary, the division of the labour process into the management function of planning and the labour function of executing prescribed tasks divests workers of their knowledge, skills and competence, and fragments, routinises, and at times destroys work. This process of deskilling or degradation is the consequence of two developments: designing machines which incorporate the intellectual and manual skills of workers, and deploying them in production systems organised around the principles of scientific management.

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[1] Ibid.; see especially pp. 381-386.

[2] Charles Babbage, writing in 1832, demonstrated that when the work process is divided into separate elements, some require less skill than others, and each requires less skill than that contained in the work process as a whole. In market terms this means that the labour power capable of carrying out the entire work process can be purchased more cheaply as "dissociated elements" than would be the case if one worker possessed sufficient skill and overall knowledge of the work process to perform it all (Braverman, ibid.:79-80).

Braverman acknowledges that such systematic restructuring of the labour process to bring it under management control "is an ideal realized by capital only within definite limits" (ibid.:172). Furthermore, the application of this principle "brings into being new crafts and skills and technical specialties which are at first the province of labor rather than management" (ibid.). However, these new crafts and skills are themselves labour processes subject to the same tendency towards the separation of conception and execution, so that in time, they too become degraded and deskilled.

2. Early Critiques of Braverman

The analysis in Labor and Monopoly Capital shows that the manner in which labour processes are organised and carried out is the product of the social relations we know as capitalist. For this reason Braverman's work is an important statement about the social determination of the labour process, and in particular, about the way in which technology is developed. As indicated in Chapter 1, and contrary to the view that productive techniques evolve according to the "inner logic" of scientific-technical development, Braverman shows that production technology reflects the choices capitalists and agents of capital have made as part of deliberate managerial policy. Braverman's Marxist analysis is therefore a strong refutation of the technological determinism which underlies earlier writings on technology and the workplace, and much

of the debate on the topic in New Zealand.[1]

Labor and Monopoly Capital also provides a coherent theoretical framework for understanding changes occurring in work skills as a consequence of changing technology, including processes of deskilling that may result from the introduction of computer-based technologies into the workplace. In addition, the theory directly challenges the post-industrial theorists' view (e.g. Bell, 1973) that skill levels rise as societies enter the post-industrial or 'information' age.[2]

Nevertheless, a number of important criticisms can be made. When I began fieldwork in 1980, criticism focused primarily on Braverman's 'objectivist' conceptualisation of the working class made explicit in the introduction to his book:

> *No attempt will be made to deal with the modern working class on the level of its consciousness, organization, or activities. This is a book about the working class as a class in itself, not as a class for itself.* (*ibid.*:26-27)

Despite this disclaimer, Braverman's exclusive concern with the objective dimension of class remains seriously disabling since, as Elger (1979:61) and others show,[3] it allows him to foreclose on crucial questions relating to the development

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[1] For a clear theoretical analysis of the concept of technological determinism, and an empirical illustration of how the intentions and choices of particular people shaped the design and development of numerically controlled machine tools, see Noble, 1978.

[2] It also challenges a conventional view of the United States as having experienced an upgrading of work in the last decades (Wood, 1982:11).

[3] See for example, Friedman, 1977; Burawoy, 1978; and Beechey, 1979.

of the labour process. Two weaknesses in his analysis - highlighted by early critics - were relevant to the study of technological change in the newspaper industry:

1) The theory presents a one-sided view of the labour process and depicts capital as imposing managerial policies on a "virtually inert working class" (Elger, 1979:60) which submits to such domination seemingly without resistance. As a consequence, it seems that for Braverman the design and planning of machinery and the organisation of work around the new technology are the inevitable outcome of the capitalist drive to achieve control over the labour process. But as Beechey (1979:4) and others argue:

> *the organised sections of the working class, in particular, can limit capital's possibilities for reorganising the labour process on the basis of new technologies and for effecting the further subordination of labour to capital.*

As noted earlier, Braverman does acknowledge that bringing the labour process under the effective control of management is an "ideal realized by capital only within definite limits" (1974:172). Nevertheless, he gives insufficient consideration to the conditions under which management policies are realized and fails to show concretely what the limits to their realization might be.

2) Braverman's neglect of worker resistance also leads to conceptual problems in his analysis of 'skill'. Since he equates 'skill' with 'control' so that the loss of one implies the loss of the other, deskilling for Braverman inevitably entails loss of control in the workplace. But as Nichols and Beynon (1977:108) have argued,

skill is not essential to control. Workers' control can be maintained even when deskilling has occurred, since workers can use their collective strength to oppose capitalism.[1] Braverman's conceptual confusion arises because his notion of control is linked - through its equation with skill - only with the individual, and not the collective, worker.

When I began fieldwork, Braverman's labour process theory and the early critique generated a number of fruitful research questions. In analysing the transformation of newspaper production techniques that had occurred at The Star, I had an interest in the following questions:

1) What motivated management in bringing in the new equipment?

2) How much influence (both individually and collectively) did workers on the shop-floor have over decisions? What role did the relevant unions play in national negotiations over the introduction of new equipment and its potential effects on employment opportunities and skill?

3) What was the nature and degree of skill of the work done before and after the transformation?

4) Was there a relation between the degree of skill and the degree of control remaining once workers' jobs had been transformed by the new technology?

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[1] See also Beechey, 1979:15.

3. Fieldwork and Recent Critiques

(a) 'Control'

Braverman's theory and the early critiques were useful in focusing research attention on the motivations of employers, and the nature and limits of worker resistance. Chapter 4 assesses the evidence for the claim that newspaper employers introduced cold-type production as a deliberate means of 'wresting control from workers' and explores the nature of the resistance of the Printing Union[1] to this new technology.

However, problems with the theory emerged during the early research period. These problems, together with more recent critiques of the deskilling thesis, pointed to a need to extend the analysis of the labour process in a number of ways.

The theory's focus on the conflict between employer and employee obscures the possibility that co-operation over the introduction of new technology may also occur when the interests of both groups coincide. In Chapters 4, 5 and 9, I explore the degree to which the Newspaper Publishers Association[2] and printers co-operated in order to pursue their respective interests and minimise the potential costs of the introduction. On the one hand, employers sought to secure some of the labour-saving benefits and efficiency entailed in the new cold-type method while

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[1] New Zealand Printing and Related Trades Industrial Union of Workers (Inc), hereinafter referred to as 'the Printing Union'.

[2] Newspaper Publishers Association of New Zealand (Inc), hereinafter referred to as the 'NPA'.

avoiding potentially costly disruptions to production. On the other hand, the printers wanted to avoid losing collective control over typesetting equipment, and the job-loss and deskilling which would occur if members of other unions (photo-engravers, journalists and clerical workers) and non-journeymen members of their own union (retrained typists) performed aspects of the new work on the computer terminals. As I hope to show, an exclusive focus on the employer/employee relationship obscures the role of labour-market segmentation in the struggle for control over the new technology.

At the same time, the particular nature of the product market - the perishable quality of the newspaper as a commodity and the competition between owners of various forms of the media - also emerged as a factor in newspaper employers' individual and collective response to resistance by the Printing Union to the potential of the technology.

In summary, since Braverman - through his conceptualisation of deskilling - links control over the technology only to the motivations and actions of employers and to the individual worker on the shop-floor, he is unable to account for these other factors in analysing the transformation of the labour process.

These findings from the early research (August 1980 to March 1981) gained theoretical articulation in the criticisms of Braverman emerging in the literature about the same period. Foremost among the critics was Stark (1980), who questioned the theoretical assumptions that underpin

the analysis in Labor and Monopoly Capital. According to Stark, the fundamental flaw in Braverman's theory is his conceptualisation of class relations, which relies on the classic Marxist problematic, class-in-itself and class-for-itself. Stark contends that "this type of class analysis proceeds by identifying the members who 'make up' the class; this aggregate is then given the properties of a purposive actor" (ibid.:96). In refuting this view, Stark argues polemically that:

> *a class is not "composed of" individuals; it is not a collection or aggregation of individuals. Classes, like the social relations from which they arise, exist in an antagonistic and dependent relation to each other. (ibid.:97)*

Therefore the object of study in class analysis should not be the elements that make up the respective classes, but the relations between them. Accordingly, Stark proposes that "a relational approach" be adopted as an alternative analytic strategy for studying transformation in the labour process - a strategy which places class struggle at the centre of analysis.

Stark argues that the shift from an aggregational approach to a relational one must also be accompanied by a shift in the level of abstraction at which the analysis is conducted, since analysis at the level of the mode of production has two important consequences. Firstly, it "sidestep[s] the problem that classes do not exist apart from their relation to the state," and secondly, this type of approach is "static [and] unhistorical" (ibid.) because it focuses on abstract classification schemes rather than on the actual processes of struggle by which classes are

relationships which they consider influence the development of the labour process: 1) between capital and labour, 2) among capitalists, and 3) among groups of workers (ibid.:227-228). Elbaum et al. conclude that the scope of any analysis of the labour process must be enlarged to consider the details of these relationships and the interaction between them.

From this perspective, therefore, the outcomes of technological change are seen as the consequence of a process of interaction: the result of shifting patterns of relations of conflict and alliance among and between groups of workers and employers. In Chapter 5, I use this theoretical framework to explore changes in the labour process in three different facets of newspaper production at The Star: plate-making, and typesetting and composition of both advertising and editorial material.

(b) 'Skill' and 'Deskilling'

The early fieldwork also showed the need to make a conceptual distinction between deskilling as a motive for introducing new technology, and deskilling as an outcome. For Braverman, a worker is deskilled when he or she loses control over the labour process. This occurs when technology and principles of scientific management separate the worker from involvement in the conception and design of work, merely leaving to him or her its actual execution. In making that claim, however, Braverman is saying two different things:

1) deskilling occurs because of a conscious attempt by the capitalist to divest control from craftsmen through

a combination of scientific-technical innovation and scientific management principles, and

2) deskilling takes place when a craftsman's intellectual and manual skills and competencies are embodied in the design of a machine and associated production techniques.

Deskilling in the latter sense can occur without the former being necessarily true. Although both are aspects of Braverman's understanding of employers' interests in introducing new technology, the fieldwork showed that detailed discussion of each sense in which the concept is used by Braverman led to different issues, and these are therefore explored separately in the study. A further theoretical evaluation of the conceptual link between control and deskilling is left until the concluding chapters.

Furthermore, based on the fieldwork, an analysis of deskilling in the second sense - deskilling as an outcome - revealed the need to clarify the concept of skill itself. As I have already indicated, Braverman's deskilling thesis relies upon an objectivist definition in which skill is seen as "the combination of knowledge of materials and processes with the practiced [sic] manual dexterities required to carry on a specific branch of production" (Braverman, 1974:443). The skilled worker is one who has overall knowledge of the labour process and is involved in both its conception and execution. In Chapter 7, evidence for objective, or technical, deskilling is assessed with respect to the work of the photo-engravers and the

compositors. While this analysis reveals the utility of the concept, it also suggests that the process is more complex and uneven than that suggested by Braverman.

Braverman's focus on objective changes in skill leads to neglect of the role of conventional definitions of skill[1] in the process by which work organisation and productive techniques are restructured - an issue which the fieldwork showed to be crucial. As Beechey has argued (ibid.:13-14) the concept of skill when applied in the workplace can refer either to:

1) the objective aspects of a job: the technical knowledge, competencies, judgement and discretion a worker acquires and exercises in the course of practising a particular trade or occupation, or

2) conventionally or subjectively-defined skill acquired through the collective bargaining process between employer and employee, or through "custom and practice" (ibid.:13).

The field data suggested a complex relationship between the objective and subjective dimensions of skill. This relationship is explored in Chapter 8, where I examine the objective or technical changes in the work of the retrained linotype operators and the ambiguities in their responses to these changes - ambiguities which I explain

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[1] See Lee's reference to the "social construction theory of craft work" that underlies much of the British writing on industrial relations since the Second World War (1981:57-58). For example, Beechey notes that in certain sections of the British engineering industry groups of workers "perform labour which is conventionally defined as skilled but which might more accurately be defined as semi-skilled, if an objective definition of skill were provided" (1979:13).

in terms of the feelings of some of the tradesmen that, in contrast with their former trade on the 'linos', the new work on the computer terminal was 'women's work'.

Historically, both technical changes in the nature of typesetting work and subjective definitions based on gender have given rise to the social construction of skill in the everyday experiences of the men and women at The Star, and this conception of skill had a bearing on the tradesmen's feelings about their jobs following the most recent technological change.

Significantly, this socially constructed conception of skill influenced the strategies the printers adopted over the new technology, particularly over the introduction of the new computer-based system of processing advertising material. This issue is explored in Chapter 9 in a case study of the introduction of the Classified Management System, CMS, into The Star. At the centre of the struggle over its introduction lay a demarcation dispute between the Clerical Workers Association and the Printing Union, a dispute in which objectively-defined and subjectively-perceived deskilling were both key issues. Moreover, as Chapter 10 shows, this socially constructed conception of skill shaped the attempts of printing tradesmen to re-assert the status differential between their jobs and those of former clerical workers (now non-journeymen members of the Printing Union) who retrained for the new system.

The conceptual guide to the structure of the thesis, outlined in the two preceding sections, completes this chapter and the introductory part of the thesis. In Part

Two which follows, I begin examining in detail the social process influencing job-structure and organisation at The Star following the move into cold-type production.

PART TWO

STRUGGLE OVER NEW TECHNOLOGY

CHAPTER 4

EMPLOYER MOTIVATION AND WORKER RESPONSE

1. Introduction

As discussed in the previous chapter, labour process theory provided a framework for the analysis of technological change at The Star. This framework generated a set of research questions to guide early fieldwork. The present chapter focuses on the first two of these questions: the motivations of employers in introducing cold-type production and the nature of worker resistance to this new technology.

Braverman's deskilling theory would suggest that The Star's management attempted to restructure the newspaper's labour process in order to weaken the control which key workers had over production. Accordingly, the new computerised printing technology would be seen as a means of deskilling some workers and rendering others redundant, a process which - according to the theory's critics - Star employees and their unions could be expected to resist.

Before examining the issue of 'control' as it relates to deskilling however, the extent to which management introduced new technology to increase control through technical deskilling has to be established empirically. Discussions with management personnel, and inferences drawn from early fieldwork, suggested that there were four main reasons for the decision (and these are discussed in Section 1):

(a) hot metal printing equipment was becoming obsolete, and spare parts were difficult to obtain; (b) there was an expectation that computerised typesetting would reduce production costs; (c) the new system would be more efficient, particularly more accurate; and (d) cold-type production techniques would significantly improve working conditions. While acknowledging that external factors constrained New Zealand employers, Section 3 examines the way in which new technology reduces production costs by reducing labour requirements. Section 4 evaluates the evidence contained in the preceding two sections in the light of Braverman's argument about technological innovation and increased managerial control. This evaluation leads to a preliminary consideration of the role which organised labour played in the introduction of the technology (Section 5). The chapter concludes that an explanation for early field data requires reshaping the theory of the labour process to account for the changes at The Star which followed the move into cold-type production.

2. Managerial Motives for Introducing New Technology

Turning now to a discussion of the motives of newspaper employers, I begin with the first of the four main reasons for the decision to move into cold-type production.

(a) Obsolescence

Official company statements cited the obsolescence of hot-metal equipment as the primary reason for the change

to cold-type production. For example, a special edition of The Star's 'in-house' magazine (Inkspot, 1979:3) announcing the proposed changeover told staff that the Board of Management of NZ News Ltd made the initial decision to introduce new technology into the group's newspapers as traditional suppliers of conventional hot-metal equipment in America progressively closed down this part of their operation and moved into producing computerised systems. The statement went on:

> *Although gradual at first, the number of newspapers throughout the world now using computerised copy processing far exceeds those on hot metal and continues to grow at a rapid rate.*[1]
>
> *The Board of NZ News Limited faced a situation that if the group's newspapers were to continue to be produced with equipment of a high standard, serious consideration had to be given to changing to an electronic copy processing system.*

Evidence from field data supported the Board's position. For example, spare parts for linotype machines had been taking up to three years to arrive at The Star. Soon after I commenced fieldwork, the production manager commented that "just last month [October, 1980] spares ordered in 1978 arrived". Although the orders had been cancelled, this one had "slipped through the system". The Assistant Manager at the time explained that, faced with difficulties in obtaining replacements for spare parts, The Star had the choice of "cannibalising from different machines, or running down the equipment". He estimated

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[1] By the end of 1974, 84 per cent of all American daily newspapers had adopted new production systems according to the American Newspaper Publishers' Association (Christchurch Star, March 11, 1978).

that the newspaper could possibly last for five more years with the existing equipment.

During a visit I made to The Press[1] in March, 1981, a stereotyper spoke of the difficulty his department was having in obtaining supplies of the thin strips of pre-glued cardboard which stereotypers used to fill out the spaces in the matrix or mat (the cardboard mould used to cast the metal plate). This had to be done to prevent the spaces from filling with lead when the plate was made and 'printing up' as strips of black ink on the printed page. He explained that the firms supplying the cardboard strips had stopped producing them. In addition, the mats themselves now came from Austria because American firms had also ceased producing them. As The Star's General Manager explained in a November 1980 interview, "change was foisted on us from outside New Zealand".

(b) Costs

The anticipated reduction in production costs was also a major factor in the Board's decision to change to the new technology. The New Zealand newspaper industry in the 1970s was facing increased labour costs and rising prices for newsprint, zinc, ink and photographic materials (Christchurch Star, March 11, 1978). At the same time, falling revenue from advertising was squeezing profits (ibid.). The Editor-in-Chief of NZ News, R. Sayers, speaking at a 1978 new technology seminar, said the industry

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[1]Christchurch's morning newspaper, which did not change to computerised typesetting until July of that year.

was "at a crossroads" with costs "soaring" and revenue down (Imprint, March, 1978). In the same year, NZ News' Managing-Director, N.P. Webber, pointed out that newspapers were "very closely in tune with the national economy and prosperity" (Christchurch Star, March 11, 1978). 'Situations Vacant' advertising, for example, was down 60 per cent in Christchurch and 50 per cent in Auckland in January of that year, a situation parallelled throughout New Zealand. Since between 75 and 80 per cent of the income of large newspapers came from advertising, Webber said, downturns like this were obviously significant (ibid.). Moreover, Webber contended that the present state of the industry (in 1978) could not be separated from the competition which newspapers faced from the electronic media (Christchurch Star, March 11, 1978).

Research into the New Zealand newspaper industry - conducted by journalist, M. Conway, for the Commission for the Future (1981:27) - substantiated these claims. Noting that the industry was labour-intensive, Conway showed that in the period between 1961 and 1979 the national average award wage increased by 485 per cent, which was considerably more than the increase in advertising revenue of 348 per cent. Conway also noted that the cost of newspaper distribution, and newsprint and other materials, had "increased greatly in recent years" (ibid.).

In a 1978 newspaper article entitled, "The New Technology ... Can it spell salvation?" Webber is quoted as saying that the solution to the newspaper industry's problems was the adoption of the new computerised technology

enabling newspapers, among other things, to be produced more economically (Christchurch Star, March 11). These sentiments were also expressed by Sayers at the March seminar on new technology in the industry (Imprint, March, 1978).

(c) Efficiency

A third factor in the decision to adopt the new technology was that computerised typesetting produced newspapers of better quality with fewer errors (Christchurch Star, March 11, 1978), enabling newspapers to compete more efficiently with other media (Imprint March 1978). Senior production and editorial staff at The Star talked of the greater speed and flexibility which a computerised system of copy processing afforded. As one executive put it, being able to "pump the work out to meet the deadlines" was an important characteristic of newspaper production. The Production Manager explained that with a computerised system deadlines for classified ads "can be moved forward" by more than an hour,[1] and (on the editorial side) "there is more flexibility in coping with later-breaking stories".

The flexibility of the system had another important advantage for editorial production, as the Deputy Editor at the time (May 1981) explained. The type-face, type-size and means of setting[2] the material in the column could be

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[1] This has allowed the advertising department at The Star to receive ads more than one hour later than the former 8 a.m. deadline - an important feature for an afternoon newspaper.

[2] Composing.

easily varied. He gave the (manual) typewriter as an analogy:

> *Once you type up a story in a particular way [a particular shape] - to change that you would have to type it all over again. That was the case with the old system of linotype setting.*
>
> *With the computer, after the initial keystrokes the story can be changed. For example we can, for one edition, set in single column, and then in the next edition it could be multi-column, and of a different type. To do this, no re-keyboarding [of the original text] would be required. This saves labour, but most importantly, it saves time.*

The Deputy Editor gave another example - a "ragged set" which involved "fancy setting" of the text round a photo. Once, when working as a sub, he had written up the type-setting instructions for this setting, and "it took the operator about two hours to set it and the result was an indifferent one". Under the new system this setting was "very easy".[1]

On another occasion, the Production Manager illustrated the flexibility of the system for production when he spoke of recent changes that had been made to the column widths of the newspaper, a procedure that took two weeks compared with six months under hot metal. Moreover, the cost of the changes would be "measured in thousands".

Cold-type production was also a more accurate method than hot-metal typesetting and composition for a number of

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[1]The significance of these statements can be understood in the light of the technical description of photocomposition in Chapter 2, pp.41-45.

related reasons. When a mistake occurred in a line of metal type the proof-reader marked the galley proof, and the line was returned to the linotype operator for correction. A bulkhand[1] (comp) then had to find the original galley of type, remove the old line and insert the new. The comp may have had to make a large number of corrections working at speed. Since type-sizes for classified advertising and the bulk of editorial copy are small, and type-faces (in reverse image) would have already been inked to make the galley proof, the comp could easily insert the corrected line, leave in the line containing the error and discard another line by mistake. Or there may have been an error in the 'corrected' line as well. Given the pressure of deadlines, the possibility of an error being printed in the paper was therefore high. A 52-page newspaper, for example, will carry more than 100,000 words - about two-thirds of them examined for potential use on the day (Christchurch Star, March 11, 1978). In classified advertising, the likelihood of error is even greater, since this type of copy presents special production problems.

Classified advertising is one of the most labour-intensive areas of production. Table 2 illustrates the amount of labour used in manually producing 70,000 lines

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[1] A bulkhand assembled lines of type of different point size in metal galleys and worked on 'corrections'.

TABLE 2

THE LABOUR-INTENSIVE NATURE OF CLASSIFIED ADVERTISING PRODUCTION UNDER HOT METAL COMPARED WITH COLD TYPE

Hot Metal		Cold Type	
Last Advertisement accepted 6.00 p.m.		Last advertisement accepted 6.00 p.m.	
Staff required		Staff required	
Classified ad takers	87	Classified ad takers	77
Composing room re-keyboarding	30	PDP 11.70 computers classified	2
PDP 8 computers	2	Hard copy operators	10
Hot-metal typesetters	10	Page make-up on screen	2
Proof reader	28	Full page typesetter	1
Slug-in corrections	4		
Manually classify	16		
Manually alpha sort*	10		
Manual page make-up	5		
Total staff	192	Total staff	92
* Sort into alphabetical order.			
Last page completed 11.00 p.m.		Last page completed 11.00 p.m.	

(Adapted from a table illustrating the new classified advertising system operating at Queensland Newspapers Pty. Ltd., Brisbane (ibid.)).

of type to fill one day's classified advertising for the Brisbane daily, The Courier Mail (Australasian Printer, November, 1980:31).

With hot metal, advertisements received over the telephone were recorded on a typewriter and re-keyboarded in the composing room. As the ads were typeset in hot metal, they were manually placed into correct classification, and manually placed in correct alphabetical order within the classifications. Together with proof-reading and corrections, this meant that ads were handled several times before they ended up in print, and as The Star's Production Manager told me in an early interview, this multiple handling increased the likelihood of error.

Another source of error was the tedium associated with the job of making the corrections. Several comps at The Star admitted freely that the job could get so boring that sometimes, when they had a handful of corrections and were working down a column of type, they would toss the last few corrections into the bin[1] rather than bother trying to locate them. Moreover, the automatic linecasting machines at The Star had become so worn by the late 'seventies that up to 40 per cent of the type produced by the machines might have to be corrected manually, further exacerbating the problem of errors from multiple handling (The Star, May 14, 1980).

An Auckland newspaper executive also cited improved efficiency as a reason for the purchase of new technology.

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[1]Bins were used for recycling used lines of metal type.

He spoke of the technical limits of the mechanical process of hot-metal typesetting, and added that this production system had "reached saturation point". As an example he pointed out that (in February, 1982) the Herald[1] was "still on 80 pages" whereas the printing press could put out a 112-page paper. "There's no way we could get that work out with human labour." In order to increase production, a new type of technology was needed.

(d) Working Conditions and Job Satisfaction

In addition to the greater efficiency of the new production system, better working conditions and increased job satisfaction were also cited by The Star's senior and middle management as reasons for the change. The official announcement of the change in the newspaper's in-house magazine (Inkspot, March 1979:3) told staff that "from an environmental point there is less noise and it is easier to operate in much better working conditions". The Editor-in-Chief of NZ News also spoke about "better working conditions and more job satisfaction with the new technology" in his 1978 seminar address referred to previously (Imprint, March, 1978). The Star's Production Manager was quoted in 1978 as saying that

> *experience in other parts of the world indicates that the work is interesting and conditions much better. The black-handed, black-aproned printer is finding himself in collar-and-tie surroundings, often in air-conditioned, bright and sometimes carpeted rooms. (Christchurch Star, March 11, 1978)*

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[1] The New Zealand Herald, Auckland's morning newspaper.

A special edition of the newspaper published to mark The Star's new venture into computerised production includes reference in one article to the dangers, as well as the discomfort, associated with hot-metal production (May 14, 1980). It notes that one of the newspaper's printers complained of headaches for weeks before doctors discovered his blood contained a high concentration of lead. Every printer in the building was then tested and several more cases were detected. The article notes that one man's condition was serious enough for him to be placed on sick leave. It adds that there were obvious dangers in working with crucibles of molten metal, cutting saws and 'guillotines' (The Star, May 14, 1980). (The nature of the changes in the working environment are explored in Chapter 6).

3. The Labour-Saving Potential of the Technology

In summary, the evidence shows that The Star's management introduced new technology for several related reasons. Techniques developed in the United States allowed New Zealand newspapers to be produced more economically. At the same time, new technology increased the efficiency of production - enhancing the product for advertiser and reader alike - and improved working conditions of the staff. Moreover, because overseas newspapers were converting to computerised production methods, traditional equipment was no longer available to New Zealand newspapers. There is no doubt that as a consequence, employers were obliged to adopt new

technology. However, like their counterparts in the United States, New Zealand publishers were faced with rising costs and declining revenues and hence were forced to find a more cost-efficient method of production.[1]

Clearly, in a labour-intensive industry, significant savings could be achieved only by reducing wage costs. Journalist, R. Winsbury, argued in his 1976 British study, New Technology and the Journalist (p.31), that

> *while it does not cure all ills, and does not generate a penny in extra revenue, new technology does offer the prospect of cutting or stabilising costs by drastically cutting the number of men needed to produce a newspaper. For good or ill, that is the basic proposition lying behind new technology, and whatever its undoubted benefits may be ... there is no point in trying to disguise the general implications for employment.*

The labour-saving potential of the technology can be illustrated by overseas statistics. In 1977, for example, T.H. Farrell, Executive Manager of John Fairfax and Sons Ltd (publishers of The Sydney Morning Herald), told the New South Wales Industrial Commission that when his company introduced computerised typesetting a total of 420 positions occupied by members of the P.K.I.U. (Printing and Kindred Industries Union) would cease (Printing Trades Journal, May 1977:50). As Table 2 shows (p.87) Queensland Newspapers reduced printing and clerical staff required to record, typeset and compose its classified advertising columns from 192 (with the hot-metal system) to 92 (under cold-type

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[1] See Section 4, p.98, for comment on the extent to which this is an adequate explanation in the case of American newspaper publishers.

production) (Australasian Printer, November 1980:31).[1]

New technology has the potential to reduce labour and thus to reduce wage costs primarily in three ways:

(a) Speed

As shown in Chapter 2, increased speeds can be achieved with electronic typesetting and electronic composing, allowing fewer people to be employed to produce the same amount of copy. Increased typesetting speeds are possible for three main reasons: 1) word-hyphenation and line-justification are carried out automatically by a computer program, 2) the VDT operator does not have to carry out a series of physical operations on the linotype machine to cast the lines of type in metal and to make periodic adjustments to the machine when the type size is changed, 3) errors in the type can be corrected electronically with a minimum number of keystrokes. As previously shown, with hot metal the complete line containing the error had to be re-set on the linotype machine before a compositor located the original line in the column of metal type and replaced this with the corrected line.

The cold-type method of photocomposition, based on photo-electronic techniques, dramatically increases the speed of composing columns of type in the page.

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[1]The table should not be interpreted as providing a standard comparison between manning levels required for hot-metal and cold-type systems. There are technical and socio-political reasons why this comparison does not currently hold for The Star, or for any other New Zealand newspaper. These reasons are discussed in subsequent chapters.

As indicated earlier, hot-metal compositors composed columns of type manually, and, as the previous paragraph shows, sometimes handled the metal line-by-line. With photocomposition, editorial and advertising copy is composed in paragraphs or as complete advertisements on sheets of bromide paper according to instructions keyed into a terminal and programmed into the computer. The bromides are then pasted up manually by comps onto layout sheets (Plate 11) often in columns or several paragraphs at a time.

Moreover, with hot metal, spaces between the copy were inserted physically - rather than electronically - using strips or squares of metal. Once the day's paper had been run, this spacing material had to be physically separated from the lines of type so that both spacing material and the metal slugs could be re-used.

The Federal Secretary of the P.K.I.U. provides the following comparative speeds for the different methods of type composition:

> *An experienced hand compositor setting from a case could set approximately 2,000 characters an hour. It would, of course, take almost as long to file the characters after use.*
>
> *A machine compositor operating a Linotype could produce more than four times that amount, 10,000 [characters] an hour.*
>
> *The casting unit working from punched tape [TTS] can produce over twice as much again, 25,000 characters.*
>
> *But by contrast, a computer-fed photo-composing machine can produce up to eight million exposed characters an hour. This is more than 5,000 times the hand compositor's capability.*

> *Put differently, it means that to produce a single page of text in a large broadsheet newspaper it might take a hand compositor 22 hours; a machine compositor 5.5 hours; a TTS casting unit 1.3 hours and an electronically controlled photo-composing machine 15 seconds. (Bennett, 1979:9)*

In interpreting the significance of these figures, caution is needed. Fieldwork experience shows that Bennett compares hot-metal typesetting speeds with photocomposition without taking into account the time it takes for a VDT operator to input the data and typesetting codes using the terminal's keyboard. Nevertheless, the figures are suggestive.[1]

(b) Direct-Inputting

The second way in which new technology can significantly reduce wage costs arises from its potential for direct inputting of editorial or advertising copy. As I have shown, 'direct-inputting' refers to the process by which the initial keystrokes of the journalist or telephonist-typist on a VDT can be 'captured in print' or phototypeset without a second keyboarding by printers in the composing room.[2]

(c) Automated Plate-making and Photolithography

Two other technologies associated with computerised typesetting systems enable further reductions to be made in the cost of labour. New microprocessor-controlled

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[1]The National Secretary of the New Zealand Printing Union, C. Chiles, estimated that cold-type composing is 10 times faster than hot-metal (New Zealand Times, March 7, 1982).

[2]The technical details are complex and are discussed fully in later chapters.

equipment and photolithographic techniques have automated the process of plate-making replacing the labour-intensive hot-metal method by which cardboard moulds of the pages of type were cast in metal.[1] Similarly, the process of preparing photographs, illustrations and other artwork for reproduction in the newspaper has changed from a labour-intensive method using acid-engraving techniques to one based on photo-reproduction on art paper.[2] However, the major savings facilitated by cold-type production stem from computerising typesetting and composition.

The fact that the labour-saving potential of new technology was not made explicit by NZ News' directors in the statements referred to earlier in this chapter (Section 2) can be understood in the context of international experience with computerised newspaper production. The potential of the technology to put people out of work was a major factor in strike action in newspapers in the United States, Australia, Britain and other European countries. For example, in the United States where the new technology was first developed, industrial problems beset the Washington Post. Printers there smashed the presses at the start of their 1975 strike (The Star, May 14, 1980). New technology was partly responsible for the 1978 strike that put New York news-

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[1] Described in detail in Chapter 6.

[2] Described in detail in Chapter 6.

papers off the streets (ibid.). In Australia, the impact of new technology on traditional job demarcation led to a nine-week strike at the Fairfax plant in Sydney in 1976 (Bennett, 1979:13). Dispute over the terms on which the new technology should be introduced lay behind the disappearance of The Times from British streets for the period from November 1978 to November 1979.[1] The suspension of its five newspapers cost The Times Newspapers $60m (The Star, May 14, 1980). In West Germany during March 1978 less than a third of the nation's newspapers appeared and more than 14 million copies (about 70 per cent of total circulation) were lost, following selective strikes a week previously, as printers demanded a new agreement with employers to ensure that the new technology would not mean a loss of jobs. The publishers responded with lock-outs at 104 newspapers (Christchurch Star, March 11, 1978).

My early research showed that New Zealand newspaper employers were anxious to avoid similar confrontations with unions and the strike action and production stoppages which might ensue. For example, in October 1980, the Editor of The Star at the time spoke of the industrial upheavals at The Times in London and said he "did not feel, personally, it made sense to allow the English situation to occur here". In discussion in the composing

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[1]European Trade Union Institute, The Impact of Microelectronics on Employment in Western Europe in the 1980's. Brussels, [n.d.].

room early in 1981, a group of operators and comps agreed among themselves that - compared with other newspapers - The Star's management had been "pretty good" in their dealings with employees over new technology issues. As one of the men explained:

> *They [management] didn't want to 'rock the boat' and precipitate confrontation with the Chapel.*[1] *It could have blown up into a big issue and this would have delayed the change for several years.*

National President of the New Zealand Printing Union, W.H. Clement, was quoted in a 1978 newspaper article as saying:

> *We have firm assurances that there will be no redundancies, in the newspaper industry, that every person will be guaranteed a job at no less wages than were enjoyed before.*
>
> *We're satisfied with the assurances and we're in no doubts that the employers won't fulfil them [sic]. (Christchurch Star, March 11, 1978)*

In late 1980 Star Chapel officials also spoke of a statement which NZ News' Managing-Director, N.P. Webber, made to a seminar of Printing Union officials in April 1976, on the impact of new technology on the New Zealand printing industry. Webber had said:

> *Speaking for my company, and I believe for all New Zealand newspapers, everything possible will be done to avoid redundancy for those relatively few people who cannot be retrained or who are unsuited for another equally well paid production job. Wherever possible jobs will be provided for them somewhere else in the company.*[2]

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[1] In-house union structure within the newspaper industry.

[2] J. Williams, Father of the Chapel (FOC), personal communication. ('Father' is the name given to the senior elected official of the Chapel).

4. The Evidence Evaluated

What are the implications of this evidence for Braverman's argument about technological innovation and increased managerial control? As discussed earlier, Braverman's perspective suggests that newspaper employers would introduce new technology to reduce the control which printers and other occupational groups exerted over production. Zimbalist (1979:117-124) makes a strong argument that this was the motive for introducing the technology into the Washington Post and the New York Times. Similarly, Cockburn (1983:60-61) describes cold-type technology as the "weapon" which British employers used to "strike at the heart of craft power" in the industry.

While it is unlikely that The Star's management would publicise a control incentive, the evidence in the two previous sections of this chapter suggests that the technology was primarily introduced because hot-metal production was becoming obsolete and inefficient and because computerised production would effect savings in wages and arrest declining profitability. Discussing the control issue, S. Hill noted in 1981:

> *One does not have to argue ... for a conscious and intentional managerial policy, for some identifiable 'conspiracy' ... Managers introduce new production techniques in order to maintain or increase profitability and their assessments of new methods may contain no conscious evaluation of the control potential. (p.122)*

Indeed, early fieldwork interviews with key Printing Union officials raised doubts about the importance

of the control motive in the New Zealand case. As one Branch official put it,

> *The technology was developed in a country [the United States] which is anti-union -specifically in the newspaper industry- and therefore [the technology] embodied the principle of doing away with people and the uncertainties of human performance.*

He volunteered that this was not the situation in this country.

> *New Zealand employers do try to do their best here. Quite a few would prefer the old. They're not sure of the benefits of the new technology.*

Even if control were a factor in NZ News' Board's decision however, the evidence suggests that it is inappropriate to single this out as the sole determinant or impetus towards new techniques. In Hill's words (ibid.:112):

> *Senior managers are obviously concerned to use resources in the most efficient manner in order to create profit and increase the rate of capital accumulation. But economic efficiency does not result only from the reduced discretion of potentially recalcitrant labour...*

New production techniques are frequently developed because "they raise profits directly and with little reference to this form of control" (ibid.).

On the other hand, raising profitability through the use of cold-type technology has three potential consequences:

1) Because the new process is faster, less staff are required in the key areas of typesetting, composing, and plate-making;

2) The new process makes entirely obsolescent two hot-metal trades: those of the stereotyper and the lino-mechanic; and

THE LIBRARY

3) Direct-inputting reduces the need for printers by replacing some of them with journalists and others with typists taking telephone advertisements.

Clearly, given these consequences, loss of collective and individual worker control would be a logical outcome of the technology's introduction.[1] As Hill points out,

> *Increased control is often the consequence of technical development, rather than its primary cause. The end result for the worker is the same in either case, but the causal mechanisms differ. (ibid.:113)*

However, as the evidence in the preceding section also shows, New Zealand newspaper employers wanted to avoid the confrontation with unions that had occurred overseas. Therefore they were not willing to utilise the full potential of the technology and were prepared to compromise over its introduction - a response anticipated by Braverman's critics, rather than by Braverman himself.

5. The Role of Organised Labour

Turning then to the second of the two research questions posed in Chapter 3, what role did the relevant unions play in national negotiations over the introduction of the new equipment, and how much influence did workers at The Star have on management's decision to move into cold-type production?

Early fieldwork focused on the role of the Printing Union whose members were at the centre of the introduction

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[1] See Chapter 3 for a discussion of the conceptual link which Braverman makes between control and deskilling, and a discussion of the distinction I make between deskilling as a motive and deskilling as an outcome (pp.67-68; and pp.73-74).

of the new phototypesetting and plate-making technologies. The official stance of that Union on the issue was that the technology was inevitable, and printers would not oppose its introduction as long as the Union's conditions were met (Christchurch Star, March 11, 1978). In 1978, President, W.H. Clement, was quoted as saying:

> *To stand in its way would be the same as using a pick and shovel to build a road deviation ... Our attitude is that we accept progress in any form, and everything that goes with it. But we'll try to secure for our members a fair share of the benefits arising from the introduction of the new technology.*
>
> *It'll mean a change from the messy, sweaty conditions of production to cleaner surroundings - and that, in combination with savings to the companies, should mean better wages, better conditions. (ibid.)*

In the same article, The Star's Chapel Father, J. Williams, commented on union response outside New Zealand.

> *We think the British situation is totally ridiculous. The new technology is inevitable; we can't stop it. But, by God, we're going to get a share of the action all the way through. (ibid.)*

At the same time, though the Union had "firm assurances" from employers within the industry that there would be no redundancies (see p.97), delegates to a new technology seminar in the same month took the view that (Imprint, March, 1978:4):

> *redundancy should be fought at every opportunity, as besides losing jobs it meant a reduction of union membership and a weakening of chapels.*

In addition, delegates concluded that job opportunity was already being reduced "and non-replacement of tradesmen [natural attrition[1]] was a serious problem" (ibid.).

In exchange for the printers' compliance in principle with the new technology, newspaper publishers negotiated terms which would minimise the technology's effects on printing tradesmen's employment opportunities and skill. These terms set the conditions under which the technology was introduced in individual newspaper offices. They were the outcome of several years of negotiation - or "horse-trading", as one Union official put it - over the key issues of control over the new equipment and techniques, and over job opportunity and skill. The results of these negotiations were embodied in successive Awards[2] negotiated by the Newspaper Publishers Association (NPA)[3] and the Printing Union.

The 1977 Award contained a number of provisions outlining the conditions under which computerised processes and techniques would be introduced into the newspaper industry. Clause 22.1 stated that newspaper employers and the Union had entered into the agreement

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[1] 'Natural attrition' refers to the process of non-replacement of staff leaving on retirement, to take up other jobs or for domestic reasons.

[2] For the sake of simplicity, the term 'Awards' has been used, although in 1977 and 1978, they were Registered Collective Agreements. See Appendix C for full details of the relevant clauses.

[3] The Newspaper Publishers Association represents the majority of newspaper proprietors in New Zealand. Its membership totals 41. This includes all the major daily metropolitan and provincial newspapers. (NPA Executive Director, D.J. Patten, submission to the New Zealand Arbitration Court, Christchurch, November 1981).

to "bring about the full and efficient utilisation of the new technology". It gave details of an 'Industry Allowance' which was to be paid in recognition of the Union's acceptance of the changes associated with the introduction of the technology.

However, other Award provisions ensured that Printing Union members were protected from the bulk of the job losses inherent in the "full and efficient utilisation of the technology", thereby effectively preventing this outcome, at least in the short-term.[1] With minor exceptions, Clause 35, which related to 'Computer Input', precluded non-members from using the new computerised photocomposition equipment. Sub-clauses laid down that: sub-editors could use VDTs in the composing room to correct urgent and actionable material, but could not insert any sentences or typesetting commands (35:2); a VDT and line printer could be located in the editorial department, but only for viewing copy and not to input or compose news stories (35:3); and proof readers could use VDTs to make minor corrections but could not insert new sentences, nor alter or insert typesetting commands (35:4). Clause 35:4 stipulated that telephone operators receiving and processing classified advertising copy had to be

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[1] Job losses that did occur as a consequence of the technology were covered by provisions in a redundancy clause inserted into the 1978 Award. These provisions included a specific schedule of redundancy compensation payments related to length of service.

members of the Printing Union, although they could be non-journeyman operators.

Clause 25, covering the introduction of new equipment and retraining of staff, also ensured that the jobs of printing tradesmen were protected. Clause 25.1 gave notice of employers' intentions to staff the typographical section of their newspapers with tradesmen wherever possible. Linotype operators, comps, stereotypers and typographical apprentices would be given the opportunity to be retrained progressively in ordinary company time (Clause 25.1). In addition, Clause 25.3 made it clear that

> *should it be necessary for individual employer parties to this agreement to use keyboard operators other than journeymen (being members of the New Zealand Printing Trade Union) then such operators shall be replaced by non-journeymen ONLY after suitably skilled typographers employed by that employer have been given preference...*

In summary, in exchange for a smooth introduction of cold-type technology, newspaper employers collectively agreed to:

1) pay an Industry (or productivity) Allowance,
2) minimise redundancies,
3) negotiate favourable terms for any redundancies that did occur,
4) retrain tradesmen in preference to using potentially cheaper sources of labour from outside the union,
5) give preference to tradesmen over non-journeymen members of the Printing Union, and
6) retrain printers to typeset editorial material instead of using journalists to direct-input.

Having looked at national negotiations, I will now turn to a preliminary examination of what happened locally at The Star. Early fieldwork experience showed that, in order to effect some reduction in wage costs while avoiding loss of production, management at The Star pursued a policy of natural attrition rather than of large-scale redundancies as the new technology was phased in. Admittedly nine lino-mechanics and thirteen stereotypers were made redundant in 1980. However, no linotype operators or compositors were made redundant, and reductions in staff levels appeared to be occurring only slowly as people retired, or left for domestic reasons. These staff were not replaced. In the three years leading up to the changeover, no new apprentices or staff had been taken on in the comp room or photo-engraving department with the exception of those required temporarily while the linotype operators retrained on the terminals, and for The Star's venture into publishing a Dunedin edition using the new technology.[1] It was commonly accepted among employees that, as one ex-linotype operator put it, the company had been "running down staff for three years".

The early fieldwork also showed that despite the potential of the technology to eliminate double keyboarding, The Star was still employing printers to re-keyboard both classified advertising and editorial copy. In discussions with the Production Manager in September 1980, I was told

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[1] The Star's 11-week experiment in late 1980 proved unprofitable and was abandoned.

that technology existed for the details of a classified ad to be fed directly from the telephone into the computer for typesetting:

> *We have the technology [here]. It's a bit like a stereogram which can play tapes, records, you can record music with it, etcetera. You may not use all these different things, but they're there if you want them.*
>
> *The Americans have said [to us] 'Why do you do that - organise the classified's in that way, with so many people handling them manually when the computer equipment is there all set up?' And the answer is, because we don't want to get rid of people.*

During a conducted tour through The Star in November 1980, I was told by the person in charge of one department: "The ultimate that we're working towards is that the keystrokes of the telephonist will go direct into the computer. It has got to change..."

Addressing the new technology seminar in March 1978 (referred to on p.84), the Editor-in-Chief of NZ News spoke of "the moot point of who would man the new machines". He is reported as saying that it would be journalists who would be at the "front end" of the visual display units (Imprint, March, 1978[1]). Yet no mention was made at any stage in the early months in the field in 1980 of management's intentions to use journalists to key in editorial copy - although the technology already existed at The Star. Moreover, although sub-editors used

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[1]The actual article speaks of typesetters not visual display units, but lack of familiarity with the technical terms, at a stage when the equipment was not yet operating in New Zealand, would account for the confusion in the report.

computer codes in marking up editorial copy, subbing was done manually and VDTs were not used. In August 1980, I was told by the Deputy Chief Sub responsible for retraining other subs in the new system that "the union demarcation is very strict here. Journalists are not permitted to key in stories direct. The printers retain that right".

The evidence at The Star suggested, therefore, that the local chapel used the new technology clauses in the Printing Union Award to negotiate specific 'house' agreements which protected almost all of the jobs of printing tradesmen in the composing room.

6. Conclusion

An analysis of technological change which sees the restructured labour process solely as the consequence of managerial policies imposed on the working class cannot explain either 1) why natural attrition rather than redundancy was a preferred option, or 2) why single keyboarding was not introduced for processing both classified ads received over the telephone and editorial material. As the evidence shows, and as I argued earlier, Braverman does not consider labour resistance and hence the effect which such resistance has on the realization of managerial policies.

The Printing Union's response to the labour-shedding implications of the technology can be explained by a Marxist analysis of the labour process which takes labour resistance into account. However, such an analysis cannot explain the apparent co-operation between the NPA and the Printing

Union over conditions governing the introduction of new technology into newspaper offices.

At the same time, an analytic framework which simply focuses on the relationship between employer and employee obscures the important influence which groups of workers have in reshaping the labour process - through their interactions, conflicts and alliances. The process of negotiating the conditions in the Newspaper Award reflected a pattern of conflict amongst groups of workers - conflict which arose not only because of demarcation problems precipitated by the technology, but also as a consequence of ideological assumptions based on gender.[1]

For these reasons, the discussion in this chapter makes it clear that an explanation of changes in the labour process following technological transformation requires a relational approach. As I indicated in Chapter 3, this approach focuses on formal and informal relations of alliance and conflict among key groups involved in the transformation. Moreover, reiterating the point made by Stark,

> *the activities of any participating group cannot be understood in isolation, but only in their relation to the total field of competing and co-existing organizations. (1980:98; emphasis added)*[2]

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[1] As I will show in the following chapters, particularly Chapters 5, 8 and 9.

[2] See Chapter 3, p.72.

Stark, and Elbaum et al. (1979), suggest that three basic sets of relationships influence the development of the labour process:

1) between capital and labour,

2) among capitalists, and

3) among groups of workers.

In the chapter which follows I shall examine in detail the interaction between different groups of employers and workers in the newspaper industry nationally and locally in order to explain the structure of the division of labour which emerged when The Star changed to cold-type production.

CHAPTER 5

CONFLICT AND ALLIANCE IN THE NEWSPAPER INDUSTRY

1. Introduction

Three different facets of production changed when The Star implemented the first phase of the new technology during 1979 and 1980: typesetting and composition were computerised, plate-making was automated, and the printing press was converted from letterpress to di-litho (Chapter 2). The first two changes were the most radical and entailed major restructuring of jobs and work organisation, and these two changes are the focus of the present chapter.[1] Changes in the labour process of plate-making are analysed first in Section 2. Sections 3 and 4 deal with two distinct but related aspects of the computerisation of typesetting and composition. In Section 3 I seek to explain the job structures which emerged following the initial change from hot metal to cold type. I concentrate on three occupational groups - ex-linotype operators and hot-metal compositors (both printing tradesmen) and TTS operators[2] (who were non-journeymen members of the Printing Union). Section 4 examines in detail the question of why, despite the

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[1] Changes in the printing press affecting the rotary department did not entail either a threat to job opportunity or major changes in work skills, and are referred to in the following chapter.

[2] Teletypesetter operators; see Chapter 2, p.32 for a description of their work.

potential of the technology for direct-inputting of journalists' copy, typesetting and composing editorial material still remained the work of the printer.[1]

In analysing the process by which work was reorganised in these three areas of production, answers to two questions are sought: 1) what are the interests of the groups involved?, and 2) in what ways do these interests coincide or conflict? A relational approach indicates that the job structures which emerge are the outcome of a process of struggle between contending groups. As this chapter shows, the process of struggle influences:

1) the type of job lost, and the occupation and skills involved,

2) the nature of the jobs remaining and the choice of which occupational group would perform them, and

3) the nature and level of skill entailed in the restructured jobs.

2. Plate-making

Chapter 2 described the process of traditional hot-metal production as one characterised by a succession of changes in materials involved: from paper (advertising and editorial material) to metal (types and photo-engraved plates), to paper (cardboard matrices), to metal (curved printing plates) and finally to paper (newsprint).

Photo-engravers[2] at The Star transformed photographs or illustrations into zinc blocks or plates using a photo-

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[1] Chapter 9 deals with the issue of the direct-inputting of classified advertisements by telephonist-typists.

[2] Photo-engravers were members of The New Zealand Photo Engravers Industrial Union of Workers, hereinafter referred to as the 'Photo-Engravers' Union'.

engraving process (Chapter 2, p.38). These zinc blocks - together with metal type - were fitted into the page-sized forme from which stereotypers[1] produced a cardboard mould, or flong, in order to make the curved metal plate for the rotary press (Chapter 2, p.38; Plate 8, p.40). The image from this plate was transferred onto newsprint in the final stage of production.

Under the new computer-based system, plate-making became automated[2] and it was not immediately apparent which of the two occupational groups - photo-engravers or stereotypers - would perform the work. As discussed in Chapter 4, the new photolithographic techniques collapsed elements of photo-engraving and hot-metal plate-making into one process. Moreover, it was a faster method and hence required fewer staff. At The Star, the photo-engravers took over the new plate-making work. Eleven stereotypers accepted voluntary redundancy, while two transferred to the rotary department. I will now examine the processes which led to this pattern of job structure - beginning at the national level and then looking at conflict and compromise at The Star.

(a) Employers, Workers and the State

On March 7, 1978, the Industrial Commission sat in Wellington to hear an objection by the Photo-Engravers'

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[1] Stereotypers were members of the Printing Union.

[2] See Chapter 2, p.38.

Union to the inclusion of plate-making in the Printing Union's Awards.[1] Specifically, the Photo-Engravers' Union objected to a new provision inserted in Clause 1 of the 1978 Printing Trades and Newspaper Awards dealing with the work of employees covered by each Award. The provision gave membership coverage to employees engaged in "the production of photo-sensitive paper and flexible plates for use on printing machines..." (Imprint, March, 1978).

Submissions to the Commission by the Photo-Engravers' Union representative, Sir Leonard Hadley, described the making of plates for use on printing machines as basic and fundamental to photo-engraving skills (Imprint, April, 1978). The photo-engraving industry was, he said, a separate industry recognised in law, and it would be improper for the Printing Union to be permitted to include in its Awards work already covered by photo-engravers. He intimated that if the objection were overruled by the Commission the confusion and blurring of demarcation lines would lead to arguments between the two unions. This was not the case at the present time, and it was in everybody's interest that this situation continued (ibid.). In summing up, Sir Leonard Hadley said that if Printing Union members were allowed to make plates the membership of the Photo-Engravers' Union would be absorbed into the Printing Union;

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[1] Two different Awards cover employees in the New Zealand printing industry. A separate agreement for the newspaper industry was created in December, 1976 (Imprint, January 1977, p.1).

this would be disastrous for the photo-engraving industry.

Submissions from the Printing Union argued that modern technology had rendered plate-making relatively simple, and it was neither practical nor economical to suggest that commercial printers should employ photo-engravers to make limited amounts of plates (ibid.). A Newspaper Publishers Association representative submitted that plate-making was an extension of Printing Union members' work. From stereotyping to plate-making was a natural progression, he said. The Printing Industries Federation (representing commercial printers) also supported the view that plate-making was the work of a typographer[1] (ibid.).

On March 29, 1978, the Commission refused the application by the Photo-Engravers' Union (Imprint, March, 1978). In its ruling the Commission stated that:

> *The printing industry has been subject to great technological changes during the last decade and it is apparent that these have caused similar apparatus to be added to both printing and photo engraving establishments simultaneously.*
>
> *The rules of the two unions overlap and in neither case is there specific reference to the production or use of the recently acquired apparatus, which have overtaken the original skills of the printer and the photo engraver.*

For this reason, the Commission explained, it was unable to grant the request of the Photo-Engravers' Union

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[1] That is, a printer.

and it recommended that "the demarcation difficulties should be discussed between all the unions in the printing trade and some suitable amalgamation of interests explored" (ibid.).

In summary, the introduction of new plate-making equipment and techniques blurred the lines of demarcation between two previously distinct areas of work. In anticipation of these changes, the Printing Union inserted a provision in its 1978 Awards to ensure coverage of the new plate-making work for its own members. The photo-engravers objected to the printers' move and initiated legal action, but the Industrial Commission overruled the photo-engravers' objection. As a consequence, each union had coverage of the work and the ensuing demarcation problem had to be resolved at the local level.

(b) Conflict and Compromise at The Star

Newspapers throughout New Zealand responded in different ways. At The Star, the photo-engravers took over the new plate-making work and 11 of the 13 stereotypers accepted voluntary redundancy.[1] This decision was reached after a period of about 12 months[2] of negotiation among and between the two chapels and management. The key issue of a redundancy agreement between

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[1] Nine lino-mechanics also accepted voluntary redundancy. See Chapter 2, p.54.

[2] Chapel officials and management personnel involved in the negotiations gave varying estimates of the time, but a period of at least 12 months seems to be generally accepted.

The Star's management and the Printers' Chapel lay at the centre of the conflict and negotiation.[1]

With the assistance of relational analysis it is possible to explain:

1) Why photo-engravers and not stereotypers retrained for the new work,

2) Why stereotypers took redundancy, and

3) Why - despite its position on redundancy - this redundancy agreement for stereotypers should not be regarded as a failure on the part of the Printers' Chapel vis-à-vis the less powerful Photo-Engravers' Chapel.

As a matter of principle one would expect the Printing Union to resist potential redundancies for stereotypers as part of its position on redundancy outlined in the previous chapter (p.101). To reiterate, the Printing Union held the view that

> *redundancy should be fought at every opportunity, as besides losing jobs it meant a reduction of union membership and a weakening of chapels....The ideal situation was for everybody to be re-trained in all aspects of the trade, or at the least, in the job closest to the previous one ... (Imprint, March, 1978).*

Moreover, as a result of the Industrial Commission's ruling, the issue of demarcation made conflict between the two chapels inevitable. Speaking of the new plate-making equipment, an official from the Photo-Engravers' Chapel told me:

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[1]The Production Manager at the time of the dispute told me that staff from both departments had been offered relocation and retraining within the Company, either in Christchurch or Auckland. Two of the thirteen stereotypers took up this offer.

> *The major issue we were concerned with was 'how is it going to affect our jobs?' No-one seemed to know about the equipment. When we found out what equipment was involved, then we were concerned with who was going to do it. Then it was a question of whether the stereo department would make the plates, or us.*

That meant conflict between the two chapels. One of the photo-engravers recalled that the dispute between the two chapels dragged on for about five to six months. Initially, he said, there was some uncertainty as to whether stereotypers, or photo-engravers would be retrained for the photolithographic process. One solution that was suggested was that half the staff of each department be offered redundancy and half retained and retrained for the new work.

The resolution of this conflict was influenced by actions taken at the other metropolitan 'daily' owned by NZ News, the Auckland Star. The Auckland Star's stereotypers had successfully negotiated a voluntary redundancy agreement in the previous year[1] and this set the background to the response of stereotypers at The Star. The Printers' Chapel, on behalf of the stereotypers, became involved in negotiating a voluntary redundancy agreement with The Star's management.

During the year of negotiation, there was, in the words of one member of management:

> *a fair amount of bluff and counter-bluff. This set the parameters [sic] of how far we could go. There were a couple of threats, there were stop-work meetings, but no stoppages.*

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[1] Within the context of the redundancy clause inserted into the 1978 newspaper Award; see Chapter 4, p.103.

This picture was borne out in discussions with chapel officials from both unions. For example, when negotiations between the Printers' and Photo-Engravers' Chapels and management were at a standstill, a dispute surfaced between members of the two chapels. In the words of one chapel official,

> *We had guys not speaking to each other. We had members at loggerheads with each other, even at the pub. This, of course, got back to management. Management's main concern was to avoid disruption. So things [negotiations] got moving again.*

The Assistant Manager at the time of the negotiations over redundancy said the issue was discussed at length in regular meetings.[1] In the end, management agreed to give the stereotypers the opportunity to take voluntary redundancy. The result was that the majority did so, and "therefore we avoided a demarcation dispute". It was, he said, "a very good redundancy agreement for the staff concerned... It was a very big lump sum at a time in their life when they could do something with it."[2]

It was generally accepted at The Star that the payments negotiated were substantial. One of the photo-engravers, for example, remarked:

> *Sometimes when I look at their redundancy agreement, I wonder if we shouldn't have gone for that. But in most cases their trade died with their job. It would be harder to prove that with us.*

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[1] During one interview he held up a very thick file with records of the discussions.

[2] The sums involved were substantial, but the actual amounts must remain confidential at the request of the General Manager at the time.

As this comment suggests, the readiness of stereotypers to take redundancy was also aided by their realization that the new plate-making process was less similar to stereotyping than to photo-engraving, notwithstanding the arguments put forward on behalf of the printers during the Industrial Commission's hearing.

Up to this point I have examined the new labour process in terms of the conflict that existed between management at The Star and each of the two chapels, and within the Printers' Chapel between the collective interests of the union and the individual interests of a group of its members. Now I turn to an assessment of the effect of competition between employers on the negotiating strength of the Printing Union.

(c) Competition among Employers

The negotiation of a generous redundancy agreement reflected the printers' strength - strength backed by several factors. Newspaper proprietors in the main metropolitan centres face competition with other newspapers for advertising and circulation revenues.[1] Even when no other publisher produces a daily newspaper in the same centre, the company competes for advertising and readership with other forms of media, importantly radio and television.[2]

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[1]Auckland: Wilson and Horton Ltd.: The New Zealand Herald (morning newspaper); NZ News: The Auckland Star (afternoon). Christchurch: The Press (morning); NZ News: The Star (afternoon).

[2]As is the case with Wellington Newspapers Ltd and The Otago Daily Times in Dunedin.

Recently, 'throw-away' newspapers delivered free to households have also been competing for available advertising.[1]

Furthermore, the product market within the newspaper industry is of a particular kind. News is a highly perishable commodity which, unlike capital goods, cannot be stock-piled.[2] As the Executive-Director of the NPA, D.J. Patten, explained it,

> *With a newspaper you're putting out a daily product. It's not like plastic bottles which come off an assembly line. If you miss an edition then you've had it.*

Strikes and short-term interruptions to production result in the newspaper losing current advertising and circulation revenue and possibly its future share of the market. Speaking of the problems involved in the introduction of new technology, the Production Manager of Wellington Newspapers Ltd., J. Forster, commented:

> *The greatest difficulty was that deadlines were critical. The most difficult thing was a work-to-rule because [for example] that prevented us getting The National Times to Invercargill at the right time. If you don't get it there before church you can forget it.*

Industrial action also affects distribution costs as the following illustration shows. During discussion of a current technology issue in November 1981, Printing Union officials were speaking about different strategies the Union might adopt over the issue, and one commented:

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[1] It is true that some 'throw-aways' are produced by the newspaper companies themselves.

[2] As Zeitlin (1979:267) has also shown in his study of the industry in Britain between 1890-1930.

> *There wouldn't need to be a strike. You just hold stop-work meetings just before deadlines. For every hour delayed there's the money which the newspapers have to pay out to get special transport if they miss the buses [on the scheduled runs].*

The different occupational groups[1] within the Printing Union occupied strategic places under hot-metal production, since they controlled critical points in the work process.[2] Without printers, no type could be set or composed, nor printing plates produced, and the paper could not be printed. Since newspaper employers were extremely vulnerable given the nature of the product market, printers could ensure that the new technologies would be introduced on terms favourable to them.

There were, of course, limits to the printers' power as overseas experience had shown (see Chapter 4). With rising costs and declining revenue, newspaper companies could not withstand sustained strike action indefinitely and were at risk of 'folding' completely. The New Zealand Printing Union was well aware of the dilemma of which British journalist, R. Winsbury, wrote:

> *If it is true that the sheer survival of some or many newspapers is at stake, certainly at anything like the circulations and resources they enjoy today, then resistance to new technology will simply hasten the elimination of just the jobs - and more - that [newspaper employees] are trying to defend. (1976:3)*

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[1] Linotype operators, lino-mechanics, compositors, stereotypers and machinists (printing press).

[2] The extent to which this is <u>still</u> the case under the new production system is, of course, a central issue in the thesis.

(d) Summary

The Industrial Commission's ruling, refusing the Photo-Engravers' Union's objection to the inclusion of plate-making in the Printers' Awards, led to potential demarcation difficulties at the local level. Management wanted to avoid a demarcation dispute between the two chapels because this would disrupt production. The stereotypers were not keen to retrain for the new work, but wanted to receive a good level of redundancy pay when they left The Star. The photo-engravers were prepared to retrain because they did not want to lose their jobs, and the new work seemed closer to their former trade.

From the Printing Union's point of view, loss of membership was a critical issue, and union officials would prefer to have seen the stereotypers retrain rather than accept redundancy. However, given the stereotypers' preference, The Star Chapel negotiated with management a voluntary redundancy agreement against the background of a similar agreement successfully negotiated in the previous year for stereotypers at the Auckland Star. The very high level of redundancy payment attained can be understood in the context of the bargaining strength of the printers which stemmed from their strategic role in hot-metal production[1] and the nature of the product market.

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[1] In contrast, the work carried out by photo-engravers under hot metal (producing photo-engraved blocks of photos and illustrations) was not crucial to daily production.

In evaluating the accuracy of this overall interpretation of events, some caution is needed. The issue was resolved five months prior to the start of fieldwork,[1] and the interpretation therefore relies in part on accurate recall of past events by groups with differing political interests. Nevertheless, the account demonstrates that an understanding of job structures and work organisation following the changes in plate-making requires a relational analysis. In the section which follows, this method of analysis is used to explain the restructuring of jobs that occurred in the area of typesetting and composing when The Star first moved into cold-type production.

3. Typesetting and Composition

As shown in Chapter 2, typesetting was computerised in two stages.[2] In the first stage - leading up to the May 1980 changeover - 26 linotype operators were retrained to set type using visual display terminals. In the following year, 19 comps began retraining as VDT operators. Hard copy of both advertising and editorial material was entered into computer storage by these operators.[3]

The second stage took place between March and June 1982, when 22 telephonist-typists were retrained to input classified advertising copy directly into the computer.

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[1] The Arbitration Court approved the terms of the redundancy agreement in Christchurch on March 13, 1980.

[2] See pp.57-58.

[3] The distinction between hard copy and electronic copy is explained in Chapter 2, pp.52-53.

However, as the evidence in the previous chapter indicated, it was technically feasible to have implemented this system of direct-inputting[1] in May 1980. Moreover, direct-inputting by journalists was also feasible during this earlier period - as was a system of subbing and proof-reading[2] copy on screen. Notwithstanding this, when the present study concluded in November 1983 the work of the three occupational groups involved - journalists, sub-editors and proof-readers - was still being carried out in the same manner as it had been at the May 1980 changeover. As I will show in this and subsequent chapters, the original decision setting the timetable for the changes was made primarily for non-technical reasons.[3]

After May 1980 the composition of type was carried out by the photocomposition process described in Chapter 2.[4] In preparation for the new process, 36 hand compositors ('comps') were retrained in paste-up techniques. No lino-type operator or comp was made redundant, despite the labour-saving facilitated by the technologies which were implemented during the first stage of computerisation.

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[1] An explanation of the technique is given in Chapter 2, pp.52-53.

[2] Although proof-reading on screen was not mentioned explicitly during early fieldwork, it is clear from the wording of Clause 35:4 of the Newspaper Award (Appendix C) that the possibility of this occurring had been considered by the printers.

[3] Admittedly The Star's experience with operating computerised typesetting systems suggested, in hindsight, that there were good production reasons for phasing-in different aspects of the system over a period of years.

[4] Pp.41-45.

I have shown that the March 1977 Agreement[1] between the NPA and the Printing Union - which set the conditions under which new technology would be introduced - had been intended "to bring about the full and efficient utilisation of the new technology" (Chapter 4, p.103). But in August, 1981 - four and a half years later - the then chairman of the NPA, and Managing Director of NZ News Ltd., N.P. Webber, was reported in The Star as saying:

> *As I see it, the big challenge before New Zealand's daily newspapers is to use more efficiently the new technology ... to avoid the double keystroking of incoming classified ads by advertisement takers and then by printers, and to avoid the double keystroking of much of the editorial matter by both printers and journalists. (August 4)*

A relational analysis of technological transformation provides an explanation for the gap between the ideal of "full and efficient utilisation" mentioned in 1977 and the reality four and a half years later. Such an analysis shows that the structure of jobs which emerged at The Star resulted not merely from the attempted introduction of the new classified and editorial systems by management, and the resistance to them by the printers. Job structures were the outcome of patterns of conflict and co-operation among and between The Star management and employer groups, the Printing and Journalists' Unions at national and chapel level and, within the Printers' Chapel, among tradesmen and non-tradesmen.

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[1] Award.

In the present chapter I seek to explain the structure of jobs associated with typesetting and composition during the first stage of computerisation (May 1980). The present section concentrates on changes in the jobs of three groups of workers who were responsible for hot-metal typesetting and composition - linotype operators, hot-metal compositors, and TTS operators. Section 4, which follows, examines why a system of direct-inputting of editorial material was not implemented during the 1980 change to cold-type production. (Chapter 9 explains why the new system of inputting classified advertising copy was not introduced until 1981.) I shall begin this section by examining the co-operation that occurred between employers and printers over the initial move into cold-type production - an analysis which also provides the context for the discussion in Section 4.

(a) Co-operation between Employers and Printers

International experience with new technology had shown New Zealand employers and printers the cost of confrontation: a drop in profitability as editions were lost or papers closed, and a drastic reduction in printers' jobs.[1] As a consequence, both employers and printers wanted to avoid confrontation. They developed what has been described as a "carefully orchestrated" approach to the changeover (Christchurch Star, March 11, 1978). As a consequence new computerised production equipment and

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[1] See Chapter 4, Section 3.

techniques were introduced into New Zealand metropolitan newspapers between 1979 and late 1981 without the loss "of one single edition".[1]

The basis of the carefully orchestrated approach was the 1977 Newspaper Collective Agreement. Printing Union National President, W.H. Clement, explained that it

> *represented the industry's agreement to face common problems logically. It was the result of considerable industry discussion over a long period. The employers needed an overall agreement to provide time for their consideration of many factors such as the type of equipment required (differing with each office), getting into the queue, planning finance, preparations for installation, practice runs, training and retraining staff, etc. The employers also needed assurances that the Union would honour the agreements made. (ibid.)*

Chairman of the NPA's Industrial Committee during 1980-81, R.J. Richardson, agreed with Clement's view that the means by which such an agreement had been reached had been by co-operation[2] (NPA Conference Special, 1981:23). He told the NPA's 1981 Conference that

> *both the employers and the printers' union, recognising that the change from the traditional hot metal system to computerised phototype-setting was inevitable, actively worked together to ensure that the change-over was achieved in an orderly manner. (ibid.)*

The mechanism by which this had been achieved was the Joint New Processes Committee set up about three years previously by both parties.[3] In Richardson's view, since this Committee was free from the pressures and tensions associated

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[1] W.H. Clement, submission to Arbitration Court, Christchurch, November, 1981. (The proceedings of this hearing are discussed in detail in Chapter 9).

[2] Not all Printing Union officials shared this view, however.

[3] The exact date of the Committee's formation was not known by Richardson.

with annual Award conciliations, it was able to discuss problems as they arose "in an informal atmosphere and arrive at solutions that normally reflect a give-and-take attitude from both sides" (ibid.). A Printing Union official referred to the Committee as a "buffer zone".

The Newspaper Collective Agreement was negotiated in the context of conflicting interests between the parties. Employers wanted to introduce single keyboarding to cut labour costs. The Printing Union wanted to avoid loss of job opportunity for its members and loss of union membership - an important source of the Union's power. The resolution of these conflicting interests in the formal agreement between the NPA and the Printing Union had consequences for the way in which work was organised on the shop-floor in individual newspaper offices round the country. At the same time, the process by which resolution was reached, both nationally and locally, was also determined by the extent to which employers' and printers' interests coincided with, or diverged from those of other groups within the Printing Union itself and those outside the Union.

Firstly, to explain why linotype operators and hot-metal compositors (printing tradesmen) but not TTS operators (non-journeymen members of the Printing Union) were retrained as VDT operators at The Star, I begin by examining the local conflict which existed within the Printers' Chapel between these two occupational groups.

(b) Selection for Retraining on VDTs

Braverman's analysis of the labour process suggests that when introducing a new technology, employers would retrain a group of workers which (relative to other labour sources) had the most appropriate skills, was faster, cheaper, and more easily manipulated. At The Star the group which appeared to fulfil these characteristics were the TTS (teletypesetter) operators.[1] A TTS operator was, in the words of the Printing Union's National President, W.H. Clement:

> *usually a speedy male*[2] *or female typist who punched a qwerty keyboard machine which produced punched tape. The tape was used by another typographical person to activate automatic hot metal type setting. (op.cit.)*

TTS operators "acquired some typographical knowledge and learned a few printers' marks for correcting their proofs" (ibid.).

The layout of the qwerty keyboard - which is used on the TTS machine, the conventional typewriter and, typically, on all computer keyboards - is quite different from a linotype keyboard with its 90 keys laid out in banks of three. Moreover, unlike the linotype operators, compositors did not possess keyboard skills of any kind. In addition, although comps had typographical knowledge and experience associated with their apprenticeship in hand-composing,

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[1] The nature of the typographical skills required for VDT operation, and the extent to which non-journeymen *vis à vis* linotype operators possessed these skills, is explored in later chapters.

[2] Although some men have been employed in New Zealand newspapers as TTS operators (for example, at the New Zealand Herald early in 1982), the job is typically done by women for reasons that will become apparent in section (c) which follows.

they were not familiar with 'house style'[1] and the mark-up used by subs for editorial copy. TTS operators, however, had some limited understanding of both.

As Clement's description above suggests, TTS operators had the speed and skills of a fast typist. 'TTS girls' had to have a minimum typing speed of 60 words per minute to qualify for the job. At The Star, management personnel, printing tradesmen and the women themselves all commented on the speed of TTS operators. For example, I was told in September, 1980, that in terms of output, "one woman [on the TTS machine] is worth three guys". On another occasion - in conversation in the comp room - one of the men remarked that 'The women handled 80 per cent of the work before the changeover from hot metal". As I was told in the early stages of cold type, the men were "twice as fast on the VDTs as they used to be on the linos" but this was still slower than the women. A TTS operator echoed the views of others in the TTS room when she said: "The men would hate it if they knew I said this, but we do a damn sight more work than they do".

Subsequent fieldwork showed that such comparisons need to be qualified because the work done by each occupational group differed in significant ways: under cold-type production TTS operators handled straight run-on ads and editorial copy, while the men on the terminals set the more complex spaced ads and other tabulated material

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[1] Typesetting and editorial style used by a particular newspaper.

as well as straight editorial copy. In addition, the comparisons were influenced by assumptions based on sex-stereotyping of occupations, such as the view that typing is "essentially a female skill". (The issue of gender and the development of the labour process is explored fully in Chapter 8.) Nevertheless, such statements suggest that keyboard efficiency was one reason why management might have preferred to retrain the TTS operators in preference to the comps.[1] Another reason for preferring to retrain the TTS operators was that a typist's skills were cheaper. This is suggested in the following comment by an ex-linotype operator when discussing the (then) current demarcation dispute between clerical workers and printers (discussed in Chapter 9):

> *I don't know whether I should say this but management would prefer to bring girls from school in [to work on the terminals]. They type better than us, and management could get them at only a third of the pay.*[2]

An ex-comp suggested another reason - that the 'TTS girls' were manipulable. In the men's experience, he explained, women in the Printing Union diluted chapel strength:

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[1]The inference that women were considered more suitable to work on VDTs was also drawn from other comments volunteered by management personnel at The Star and at other New Zealand newspapers. For example, in conversation at The New Zealand Herald, one executive spoke favourably of female printing apprentices compared with males and noted, "The girls are so far ahead in terms of their keyboard skills and speed it doesn't matter!"

[2]Such an estimate presupposed that wage payment would be made under the Clerical Workers' Award and not the Printing Union Award.

> *They have a tendency to 'run to water'. They won't stick by the Union. Men are willing to give a few days' pay for the future of our jobs. Women won't. They only work for money. They don't care about the job. They only want it for a couple of years when the children are at school.*[1]

Furthermore, women typically have a higher 'natural attrition' rate, since they leave employment for reasons related to childbirth and child-rearing, and to accompany their husbands on transfer to other centres of work. Since a reduction in labour costs was possible with the technology, employing an occupational group with a higher 'natural attrition' rate would facilitate the process of adjusting labour requirements to the work available - and this was in management's interest.

In addition, TTS operators were keen to retrain on the terminals, whereas many compositors were reluctant to do so. Five or six of the 25 comps at The Star in 1981 had already trained for one trade - paste-up - and did not want to train for another. As one comp in his late 20s put it, "There is a principle involved. I was trained as a hand typographer. I don't want to become an operator." Others disliked the idea of sitting all day, "typing away, staring at a TV screen". In the words of one comp, "That's not my idea of a job". Another comp felt that "The lino-

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[1] The extent to which this accurately reflects reality or is a male tradesman's view cannot be explored here. Evidence from the fieldwork suggests that although there may be some grounds for the statement, it also reflects gender-based assumptions about women's workforce participation. Moreover, the attitudes and behaviour of the female telephonist-typists during their conflict with management in March and April 1982 (referred to in Chapter 10 (p.335)) suggests that in future, women may take a more active role in union activity at The Star.

op's job [had] gone from being a man's job to a woman's, sitting behind a typewriter all day".

Notwithstanding this reluctance, however, the compositors were faced with the fact that the new technology at The Star automated significant parts of their former work, and fewer staff were required for the 'paste-up' work that remained.[1] Moreover, during 1981 the comps were becoming aware of future developments in electronic composing known as 'pagination' which could reduce the requirement for their trade even further.[2] These current and imminent technological changes threatened their jobs and, in turn, the strength of the Printers' Chapel.

Despite the apparent suitability of the 'TTS girls' for the work on VDTs, in the initial stage of the change-over in 1979-1980, the women remained on the TTS machines which - as an obsolete technology[3] - were to be phased out. During 1979 and 1980, while linotype operators were retraining on the terminals, TTS operators were called on to typeset some of the work normally done by the tradesmen. After the initial retraining period, the TTS operators reverted to their former work.

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[1] See Chapter 2, pp.41-45.

[2] Pagination is a fully automated process of composing using a computer keyboard and screen to manipulate the position of typeset material. When fully implemented, the process by-passes the paste-up stage. Pagination equipment had been introduced into The New Zealand Herald at the time of the study.

[3] See Chapter 2, p.59.

The last of the permanent TTS staff was taken on in May, 1979.[1] One of the women explained that in the middle of that year, "the decision was made not to replace anyone who left because we were not tradespersons".[2] She believed that "our chapel was responsible for this decision". Several of the TTS operators said they could understand why the men did not want them to retrain on the terminals. As one of them put it:

> *They know damn well we're better on the typewriter. We type faster and we're more efficient. I think they know that and they're scared. They have to protect their trade. Because management would want to take girls on and we are not tradespersons.*

The first group of comps began typing lessons at the end of 1980 and training for the terminals continued during 1981 and 1982. By early 1983 only two TTS operators remained and they performed limited typesetting work on the TTS machines. One of the operators took up an adult apprenticeship as a typographer. The others left through 'natural attrition'.

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[1] Staff in the TTS room reached a maximum of 10 in early 1980. Five worked full-time, and three were 'part-timers' who had previously worked full-time as TTS operators. Two more full-time operators were taken on temporarily at the beginning of 1979 to assist in the change-over.

[2] As I indicated previously, management also pursued a policy of non-replacement of other composing room staff who left. The men in the comp room suggested that this had been happening "for quite a while". In April, 1981, for example, I was told that "the last tradesman came in about three years ago. Management used to take on about four new apprentices each year. Now it's two years since they did." In 1983, however, The Star took on two apprentices and two general hands to work in the composing room.

(c) Deskilling and the Introduction of TTS

The key to the question of why 'TTS girls' at The Star were not retrained on the terminals can be found in the conflict and alliances between employers, and tradesmen and non-journeymen in the Printing Union, which stemmed from the introduction of TTS machines into New Zealand newspapers in 1954. Resistance by the printers to the deskilling entailed in the TTS operation was strong.[1] For example, in presenting his submission to the Arbitration Court hearing in Christchurch in November 1981, Printing Union President, W.H. Clement, spoke of the installation of the TTS machines in 1954. He told the Court:

> *Female clerks ... were recruited to operate the machines because the tradesmen wouldn't belittle themselves or condescend to operate the TTS.*[2]

Conversation with Printing Union officials following sittings of the Arbitration Court in Wellington[3] came round to the subject of TTS. One official remarked that when the TTS machines came into New Zealand, "the men weren't interested in working [them]. They felt it wasn't work for skilled tradesmen." He suggested that the men had "turned up their noses" at the idea of working on the TTS machines, but that this allowed the employers to bring in "the non-journeyman clause" in the Award.[4] The Union official went on:

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[1] Chapter 8 analyses the technical deskilling that occurred in 1954 together with the phenomenon of subjective deskilling arising from perceptions of work based primarily on gender.

[2] Submission to Arbitration Court, November, 1981.

[3] The Court sat in Wellington one week later.

[4] The relevant clause (in the 1981 Award) is 17:9, which refers to "operators, other than journeymen, of keyboards producing punched paper or magnetic tape ..."

> *The girls thought they were putting out the paper - that's what management used to tell them. The men were happy to let the girls do the boring, repetitive work. They kept the cream.*

Another official told me that the 'TTS girls' "did what management wanted - worked flat out under supervision." He compared the way their work was organised with an assembly line, and referred to the women as "battery hens". Similarly, at Wilson and Horton's, which publishes The New Zealand Herald, I was told, "When the TTS machines first came in, the guys wouldn't touch them - not machines for girls."

In summary, historical developments are crucial to an understanding of the new labour process associated with computerised typesetting at The Star in 1980. In the previous major technological change based on TTS machines and automatic linecasters, some aspects of typesetting were deskilled, and the number of operators required for typesetting work on linotype machines was reduced. Since printing tradesmen refused to work on the new TTS machines, this allowed non-journeymen into the union. With the current change in typesetting techniques, the printers wanted to block any further erosion of their employment opportunities and resist dilution of the union by a group of workers who tradesmen considered weakened chapel strength. Therefore, in negotiating conditions governing the introduction of new computerised equipment and retraining of staff,[1]

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[1] As discussed in the previous chapter, pp.102-104.

printers ensured that the jobs of printing tradesmen - both operators and comps - were protected.

To reiterate, the relevant clause in the Newspaper Award, Clause 25, stipulated that:

> *Where the introduction of new equipment has taken place and retraining of staff becomes necessary hand and machine typographers ... will be given the opportunity to be retrained progressively in ordinary company time in all aspects of typesetting and composition, hand and machine, ... including ... keyboarding.*[1] *(emphasis added)*

The clause stated that if individual employers found it necessary to use keyboard operators other than journeymen "then such operators shall be replaced by non-journeymen ONLY after suitably skilled typographers employed by that employer have been given preference" (Clause 25:3; emphasis added). When a tradesman left and had to be replaced, the employer was required to "actively seek by public advertisement the engagement of additional tradesmen with the skills required" (Clause 25:4). Thus Clause 25 gave tradesmen priority in retraining for the new equipment. Only where an employer could prove that he was unable to obtain the services of printing tradesmen could non-journeymen keyboard operators be retrained.

As one would expect from a relational analysis, the details of how this issue was resolved in different newspaper offices varied according to the relative bargaining strength

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[1] First appearing in the 1977 Award.

of each of the interested groups, and to the particular production system being implemented.[1]

At The Star, the Printers' Chapel used Clause 25 to block any attempt by management to retrain TTS operators.[2] Backed by the printers' strategic position in production and the nature of the product market (discussed in the previous section), the chapel won management agreement

1) not to retrain TTS operators on computer terminals,

2) not to replace with a trained typist any TTS operator who left, and

3) to retrain comps on terminals.

This course of action was pursued by the chapel at the cost of potential job opportunity and reskilling for its non-journeymen members.[3]

(d) Gender - a Sufficient Explanation?

The response of New Zealand printing tradesmen to the introduction of the TTS machines in 1954 and to the possibility that employers would use TTS operators to work

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[1] The Press, for example, retrained TTS operators on VDTs when the company phased in a fully computerised classified system in the initial stages of its changeover. Wellington Newspapers Ltd. also retrained TTS operators. In each case, however, the work performed by journeymen and non-journeymen differed in specific respects, an issue explored in Chapter 8.

[2] Printing tradesmen were numerically dominant in the largely male chapel and formed its elected executive. The female TTS operators, on the other hand, were a small and socially distinct group and their ability to influence the majority view was minimal.

[3] It is important to note that the chapel had backed non-journeymen members on other issues where conflict was between employer and chapel and not within the chapel itself. For example, one TTS operator spoke on one occasion of a "qualified input allowance" which the chapel fought to secure for them.

on computer terminals was frequently expressed as a conflict along gender lines, as the evidence above shows. However, although gender is crucial in explaining developments in the labour process,[1] it is not a sufficient explanation for the reaction of the tradesmen to the changed technology in 1954 and recently. For example, gender was not a factor in explaining the chapel's initial response to Paul,[2] the male computer programmer, during the retraining programme. In discussions with me about the programme, he volunteered that "there was a problem" if he was to become involved in developing the software (for the new computer system) specifically for The Star's requirements, since "I wasn't a tradesman." He elaborated:

> *When the thing [the system] first came in, things were very tense. [For him to be involved] would have been yet one more log on the industrial fire.*

As a consequence, Paul was not officially put on the (computer) system controllers' training course because only printing tradesmen were involved. He had sat in on only a few of the sessions. At first, he said, he was surprised that his name was not on the list of those undergoing the course, but the Production Manager

> *was treading very carefully, hoping to bring in the system with as few problems as possible.*
>
> *They [the Printers' Chapel] don't mind now, because I've helped them with [system] problems they've had, but at first - say for the first three months this happened - I was not to handle software at all.*

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[1] The relationship between 'deskilling', loss of control over work, and gender is explored in subsequent chapters.

[2] This name and the name of all other persons referred to in the thesis by first name only, is a pseudonym.

As an example of what this meant in practice, Paul spoke of the security system which ensured that only specified users had access to certain parts of the computer system. Initially, he said, the Production Manager had the highest security rating of 1 - which gave him virtually unrestricted access to the entire system - the terminal operators 40, and he, the computer programmer, was allocated a rating of only 200.

In addition, Paul recalled that about the time The Star was running trials of the new production system - putting out its suburban newspapers in cold type - he was standing at the photoprocessor[1] when the Father of the Chapel (FOC) came up and said, "I hope you're not using mark-ups?" As explained previously,[2] these were computer codes which controlled the position, size and style of type, column width and so on - knowledge of which under hot metal belonged exclusively to printing tradesmen. The computer programmer's access to this knowledge threatened their control of the trade and hence their jobs. Paul said he could understand the FOCs attitude: "The men had fears about their jobs."

Similar fears about the loss of their jobs explained the printers' response to the possibility of 'direct-inputting' by journalists. In the following exchange in April 1981, a terminal operator had just been speaking about

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[1] See Chapter 2, p.43.

[2] See Chapter 2, p.43.

the then current issue of retraining the stonehands (comps) rather than the 'TTS girls' to use terminals. He speculated that, with over-staffing, the stonehands could possibly be made redundant.

> *Q: Has there been a fear that the women would take over?*
>
> *A: [A nod of firm agreement] ... Not only the women, but the journalists as well. That always looms on the horizon.*

His response to my question suggested that, in this instance, gender was again not the salient factor.

I have been discussing the process by which typesetting work was restructured under cold-type production. Using a relational approach, I now turn to examine why - despite the potential of the system introduced in 1980 - The Star's journalists did not change over to direct-inputting, and sub-editing and proof-reading were still carried out on hard copy.

4. Editorial Input, Sub-editing and Proof-reading

Under the hot-metal method of typesetting, editorial material has to be converted from the typewritten and subbed copy of the journalists into metal on the linotype machines. With cold-type production, however, editorial material does not require this second 'keyboarding' before it is typeset, since the original keystroke is 'captured in print' without further typing. Technically, this system of direct-inputting enables a reporter to create his or her story using a VDT, make necessary corrections while the story is 'on screen' and, by depressing appropriate 'function'

keys, send it to computer storage.[1] Later, a sub-editor (sub) can recall the story onto the screen for 'subbing' and then release it from the computer for phototypesetting. Proof-reading can be done on the screen or eliminated altogether as a separate stage in the work process.[2]

When the computerised typesetting system was implemented at The Star in 1980, however, journalists and subs continued to produce hard copy for typesetting and composing by the VDT operators (printing tradesmen). Proof-readers corrected hard copy print-out of this material.

The special edition of The Star marking the paper's changeover to the new production system (May 14, 1980) carried an article headlined "The drawback to progress" which dealt with union response to new technology in the newspaper industry. The stance of both the Printing Union and the Journalists' Union on the issue of direct-inputting is clearly stated:

> *The Printing Trades Union ... has negotiated an agreement that effectively prevents journalists from operating the VDTs. The New Zealand Journalists Union will not attempt to do this work until the printers agree. For the moment, newspaper managements appear satisfied with that. (ibid.)*

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[1] For a detailed description of the process see Chapter 2, pp.52-53.

[2] It is important to note that a system of editing and proof-reading on screen does not depend on input by journalists. The fact that the three are linked in the present discussion does not relate to technical factors so much as to the fact that the work of keying-in, editing and proof-reading editorial material involves three occupational groups who are members of the New Zealand Journalists' Union - journalists, sub-editors and readers respectively. (The union covers all journalists except those in the Northern Industrial District.) The New Zealand Journalists' Union is referred to in the thesis by the shorter title, the Journalists' Union.

As this statement suggests, job structures associated with typesetting editorial material were therefore not directly determined by the technology. They were the outcome of a social process in which decisions were made - within a context set by the technology - about how work would be organised under the new system.

(a) Conflict and Co-operation between Printers and Employers

The division of labour in the new work process was governed by provisions in successive annual Awards negotiated between the NPA and the Printing Union. The relevant clause in the 1977 Award stipulated that

> *A reader or sub-editor operating a visual display unit may make literal*[1] *and minor corrections including deletions of words or phrases not requiring the use of command codes but shall not insert new sentences or paragraphs.*

This clause effectively prevented subs and readers from carrying out editing and proof-reading tasks since computer command codes could not be used to specify fonts, type-size and column width,[2] and to set and compose the edited and corrected type.

By restricting the operation of typesetting and composing equipment to members of the Printing Trades Union, a provision in the 1980 Award precluded reporters[3] from operating VDTs to input their stories.[4] The restriction

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[1] Spelling errors in newspaper production are referred to as 'literals'.

[2] See Chapter 2, p.43.

[3] The term is used interchangeably with the term 'journalist'.

[4] See Appendix C, Clause 35:1.

was underlined with the following note:

> *The VDT located in the editorial department is not an input, output or composing device but is merely a viewing terminal to enable sub-editors to check what is contained in the computer news file.*[1]

A further provision allowed subs to correct "urgent matters of fact and actionable material", but again stressed that they could not insert or alter typesetting commands.[2]

As I argued earlier,[3] the 1977 Collective Agreement secured for newspaper employers a guarantee of unimpeded introduction of new technology,[4] but - as these provisions show - this guarantee referred only to the introduction of production technology, and not to its potential use in computerised editorial systems.

However, the printers did yield one area of editorial work[5] involving N.Z. Press Association (PA) copy[6] enabling employers to avoid the second keyboarding of PA copy and hence to achieve some labour-saving.

The first stage of the computer-based news distribution system came into operation in February, 1978 (Christchurch Star, March 18, 1978).[7] This allowed

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[1] Clause 35:3.

[2] Clause 35:2.

[3] In this and the previous chapter.

[4] See Appendix C, Clause 22.1.

[5] In exchange, they won from employers some new technology concession or concessions, but details are unclear and conflicting.

[6] The N.Z. Press Association (NZPA), a co-operative venture set up by the nation's newspapers, acts as a clearing house for news.

[7] Details of the system have been drawn from an NZPA memo prepared in late 1977.

incoming news to be edited electronically at the central PA offices in Wellington before the news was despatched to individual newspapers. The second stage took place in 1979 and 1980 and entailed the installation of new teleprinters in newspaper offices. Press Association copy transmitted from Wellington was then directed from the teleprinter to each newspaper's computer storage system without a second keyboarding. As well as this saving in labour, the potential for further labour-saving is obvious. With Press Association news items in computer storage, sub-editors at an individual newspaper office could recall the copy from the system onto the screen for subbing before sending it to the photosetters. On this issue, however, the printers did not yield.[1]

In practice, this has meant that when PA reports are fed directly into the computer system at The Star, printed versions are sent to the sub-editors for selection and editing. All such stories - national and international - are then sent back to the VDT operator to key in the corrections and make deletions. Only PA copy can be fed directly into computer storage, however. 'Bureau' copy from The Star's own reporters in other centres - including the Parliamentary Press Gallery and the Auckland Star - must be keyed into the computer system by VDT operators working from hard copy.

In summary, when New Zealand newspapers changed over to cold type, all editorial material other than PA copy had

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[1]Clause 35:1, Appendix C.

to be keyed into the computer by VDT operators (members of the Printing Union) after the material had been typed by journalists. Manipulation of copy on screen could be carried out only by VDT operators. As a consequence, all editorial material - including the PA reports which were stored in the computer in electronic form - was subbed from hard copy 'print-out'. Proof-reading was also carried out on computer print-out, and the proofed copy was sent back to the VDT operators for correction on screen. Therefore a significant source of labour-saving facilitated by the technology was lost to employers, but in exchange they achieved the transition to computerised phototype-setting with no serious disruption to production.

(b) Conflict between Journalists and Employers

The journalists' position on the issue of direct-inputting[1] was crucial to its outcome. In aligning themselves with the printers they effectively blocked any moves employers might make to have journalists do the work. Journalists' Union National President, A. O'Brien, explained the union's position to me in a July 1981 interview:

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[1] In the present context, the term 'direct-inputting' is used in two related senses. It can refer specifically to the work done by reporters, or it can be used in the general sense to refer to any aspect of a system of processing editorial copy in electronic rather than hard copy form - that is, to the work of inputting, editing or proof-reading. Its significance in the following discussion is that the term refers to work which would be carried out by members of the Journalists' Union at the expense of Printing Union members.

There is a firm union policy that we won't do printers' work.

Q: *Why?*

A: *There are two reasons: One, we are protecting printers' jobs; two, we are protecting ourselves, because we see our work as news gatherers, and presenting [the news]. If it [direct-inputting] were introduced, the sub-editors would be concentrating on typesetting, command codes, etcetera, and not on their job of condensing, checking, and clarifying copy.*

As a consequence, their attention would be constantly on getting it to look right [in print] rather than on their proper function of editing the news and writing headlines.

Q: *What about the journalists [reporters] direct-inputting?*

A: *Employers want journalists to typeset, but we have never entertained the idea. The policy was set in 1977.*

Management's argument to the Journalists' Union can be that you [journalists] can have more control over the work if you're involved in keyboarding. But no, says the union, it would be a lowering of our standards, and not an increase in our control. It's just an argument of expediency.

In a subsequent conversation, O'Brien suggested that direct-inputting "wouldn't worry the journalists, just the subs". In his view "what the employers want is a 'superman'", someone able to worry about the typesetting commands, the spacing, and the final proof-reading on top of the normal sub-editor's job. Furthermore, if the journalists [reporters and subs] had to do it all, he argued, the checks and balances within the system would be lost.

A sub at The Star agreed. Under the current system, the subs, the typesetters and the readers all handle the

copy, and each has a chance to pick up errors. He recalled, for example, how several weeks previously one of the comps on paste-up noted that the heading and the substance of the story did not match-up. The word "guilty" was in the headline, whereas the story indicated that the person concerned had pleaded "not guilty" to the particular charge. The comp drew this to the attention of the sub and the error was fixed.

Summarising the discussion, within the context of their conflict of interests over the key issue of the labour-saving potential of the technology, Printing Union and NPA co-operation led to agreement on how editorial work was to be entered into computer storage, edited, proof-read and typeset and composed. Journalists, whose interests also conflicted with employers over the direct-inputting issue, aligned themselves with the printers[1] and in so doing blocked any attempt by employers to secure computerised editorial input, editing and proof-reading. These conflicts and alliances had consequences for the new job structures: who was to carry out the work, whether certain skills would be made redundant, and the nature of the skills that were required. However, shifts in this pattern of conflict and alliance were discernible over the period of the study, and these are likely to have consequences for future job structure and opportunity.

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[1]Conflict between the two unions is discussed in Section (d) below.

(c) Employers, Printers and Journalists

As I have argued, in the initial stages of the changeover to cold type, employers adopted a cautious approach which accommodated printers' demands for job protection, improved working conditions and wages. In the words of a Printing Union official, "the 1977 Agreement was entered into by both sides in good faith. There was a lot of trust at the time." However, pressure to exploit the full potential of the technology grew over the intervening period. In August, 1981, The Star ran a story in response to a paper by the Commission for the Future on the future of newspapers in New Zealand (Conway, 1981). The then Chairman of the NPA, and Managing Director of N.Z. News Ltd., N.P. Webber, commented on anticipated improvements in the quality and readership appeal of newspapers. He was quoted as saying:

> *These changes are possible through the new technology, which enables better newspapers to be produced more efficiently ... [Then he added] As I see it, the big challenge before New Zealand's daily newspapers is to use more efficiently that new technology ... to avoid the double keystroking of incoming classified ads by advertisement takers and then by printers, and to avoid the double keystroking of much of the editorial matter by both printers and journalists.*
>
> *We need to be able to use remote journalist-operated terminals to enable a later and more complete cover of distant assignments such as racing and athletic meetings. (The Star, August 4, 1981)*

Printers and journalists at The Star responded angrily to Webber's statement. The Printers' Chapel sought clarification of company policy over direct-inputting. Journalists and printers agreed that "If they want a fight,

they can have one." I sought a response to Webber's statement from the Assistant Manager at The Star:

> *Q: Does this mean the company plans to introduce direct-inputting?*
>
> *A: If you're looking at the operation as to what is the most efficient in computer terms [that is, in system terms] you would have to say that an operation which captures the original keystroke is the most efficient. It's a fact. It's a simple fact. The way it is done now [the way the system is currently operated] you would have to say that it was not the most efficient way, and then ask why.*

He pointed out that there were two aspects to the question of direct-inputting. The first involved the classified ad system which was the subject of a then current demarcation dispute between unions.[1] Given a resolution of this dispute, he explained, direct-inputting of classified ads would be The Star's next move. He went on:

> *Editorially is another matter. If we were ever to achieve that, that will be a matter of lengthy negotiations, conciliation between printers, journalists and employers. I wouldn't know when, if at all, that would happen.*

(d) Conflict and Co-operation between Journalists and Printers

The Journalists' and Printing Unions formulated a joint approach over new technology issues during a weekend seminar at Trentham on March 3-5, 1978 (Imprint, March 1978). The seminar was held to enable printers and journalists "to discuss revolutionary new technologies being introduced into the industry and to thrash out common problems to be

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[1] Discussed in Chapter 9.

faced now and in the future" (ibid.). Delegates agreed that "the present co-operation between the two Unions" should be formalised by the development of inter-union liaison bodies at both national and chapel level to work in conjunction with each other. These structures were intended as a first step towards the possible future amalgamation of unions in the newspaper industry (ibid.).

Attempts to establish co-operation between journalists and printers at newspaper offices met with varying degrees of success. An informal Joint House Committee operated during the course of my fieldwork at The Star.[1] In other newspapers local disputes threatened the possibility of joint action. The details are not relevant here, but they suggest that the alliance between the Journalists' and Printing Unions was at times an uneasy one.[2]

In response to the growing pressure from employers for journalists to use VDTs, in October 1981 attempts were again made to develop a joint strategy between the unions. In the words of a Journalists' Union official,

> *Journalists can see pressure from management [mounting] and if they don't comply, then they [employers] will take it to arbitration, where the unions are less likely to come off with a ruling in their favour.*

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[1] This Committee involved the journalists, printers and photo-engravers.

[2] This was confirmed by a Wellington official of one of these unions, who suggested in May 1982 that the study of The Star gave me an "overly rosy" picture of the degree of co-operation between the two unions.

He explained that unions preferred not to go to arbitration over technology issues because the Arbitration Court had already established the precedent that it was the employers' right to make the decision over new technology.[1]

The October 1981 initiative for the joint strategy came from the Journalists' Union Conference. The Conference suggested that a December meeting be held between the executive of each of the major unions in the newspaper industry: clerical workers, printers, photo-engravers and journalists. The aim of the meeting would be to set up a system to resolve differences among the unions over the various problems arising from new technologies. Responding to my question about the earlier attempts to develop a joint strategy, an executive member of the Journalists' Union acknowledged that there had been initiatives before on this, "but people [within the newspaper industry] are more realistic now, as the first generation technology is here - we now know it's bloody here".

By February 1982, the NPA's Executive Director, D.J. Patten, was openly critical of the Printing Union's "hardening attitude" towards direct-inputting by journalists (New Zealand Times, February 28, 1982). He was reported as saying that this latest "technological step would have to happen here" as it had overseas to retain the newspaper industry's competitive edge over radio and television.

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[1] He is referring here to the decision of the Court relating to the Wellington dispute of interest between clerical workers and law practitioners over the introduction of computer-based 'word-processing' machines into law offices (August 20, 1980).

Patten is quoted as saying:

> *We're in a competitive environment in New Zealand, and ... we must look at ways of retaining our efficiency and ensuring the cost of our product isn't so high that it's going to embarrass the reader.*

Direct-inputting was a very efficient method which allowed the journalist

> *to key his story directly into a computer without having to have it processed by a middleman. The middleman is, of course, the printer. (ibid.)*

However, Patten did not agree that this change would inevitably reduce the number of printers since they would still have an important function to fulfil in other aspects of newspaper publication. As in the past, emphasis would continue to be placed on redeployment and retraining (ibid.).

Patten's suggestion that some newspapers could close down unless new technology was allowed to progress in the industry (ibid.) is disputed by both Printing and Journalists' Unions, who point to published financial statements of newspaper companies over the last three or four years which record profit increases ranging from 20 per cent to 80 per cent each year.[1]

The annual report of NZ News Ltd., which owns The Star, showed a record profit increase of 51.3 per cent for the 1981-82 year (The Press, June 1, 1982). Reflecting on the Company's report, a member of The Star's management

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[1] See New Zealand Times interview with Printing Union National Secretary, C. Chiles (March 7, 1982) and comment volunteered by national officials of the Journalists' Union.

volunteered - at about the same period - "The guys [printers] just see the balance sheet [for the whole company] and see we've made a profit", whereas the newspapers themselves may not be doing so well. He speculated that what could happen was that "the dead branches will just get chopped off". By this he meant that NZ News could get rid of those aspects of its operations which were making insufficient profit, or making a loss. "They [the printers] say it won't happen in New Zealand, but I'm not so sure."

In the same month that Patten's article appeared (February 1982), representatives of the four newspaper unions met to explore common approaches to future introductions of new technology (Imprint, March 1982). The Journalists' Union sees the development of this combined union approach to the new work processes as essential for a negotiated settlement with employers. The journalists' policy is based on two concerns:

> *First, obviously, is plain humanity: the desire not to be instrumental in forcing fellow workers out of jobs. This needs no elaboration.*
>
> *The second concern is rather more selfish. If change does not come by agreement, then the resulting strife will poison relations between the various groups [in the newspaper industry] for years to come.*
>
> *That would cripple this union's bargaining ability - and it must be remembered that we will be faced with problems of our own. We must learn from some of the disasters overseas. (The New Zealand Journalist, August, 1982)*

At their February meeting, representatives of the four unions agreed to seek support from their respective unions to the idea of a joint approach to the NPA. However, by

May there was evidence of a rift developing in the newly formed Joint Newspaper Unions' Consultative Committee. According to one of the members, the Committee "was in grave danger of not functioning" because the respective unions could not agree on an appropriate strategy.

Divisions within the Printing Union over how to deal with the direct-inputting issue were apparent from the outset. The joint union strategy was supported by a section of that union which considers, in the words of one Printing Union official, "that unless the unions get a common front against the employer, printers' jobs will continue to disappear". Others in the Printing Union are less certain that the joint approach is the right one. For example, the Printing Union's National Executive collectively views the printers' success in the Arbitration Court hearing of their demarcation dispute with clerical workers[1] (see Chapter 9) as indicative of the likely outcome of any future dispute with the Journalists' Union. A member of the Journalists' Union described the position of the Executive in these terms:

> *They want to get the wagons out in a circle and fight to the last drop of tradesmen's blood. They've seen the Court decision as the cavalry on the horizon that has come to save them, and they want to hold out to the last stand.*

---

[1]The Court's ruling supported the case put by printers and employers that the disputed area of work was printers' work. As a consequence, the clerical workers, whose jobs were involved, became non-journeymen members of the Printing Union. (The issue is discussed fully in Chapter 9.)

However, he believed the Court decision was quite clear in its intent. It had not established that typesetting was the prerogative of the printers. Instead, the Court had ruled that each case of demarcation over the new technology would be treated on its merits.[1] In this informant's view, in a demarcation dispute between the journalists and the printers "the Court will back the employer again, and next time it'll be in favour of the journalists".

In November, 1982, The Star Printers' Chapel sent an open letter to all officials and members of its Union - fully aware of the censure it would incur - expressing concern that

> *the Printing Trade Union is concentrating on trying to preserve union coverage through expensive demarcation cases in the Arbitration Court rather than preserve our jobs.*[2]

The letter noted that the National Executive had told the Joint Newspaper Unions' Consultative Committee that the Printing Union would not attend its meetings but would "discuss matters of mutual concern as necessary with individual unions". The Star Chapel's letter called instead for active participation in the joint committee, since - echoing

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[1] The wording of the Court's decision to which he refers is as follows: "We say as clearly as we can that the decision in this matter cannot be of general application. The Court can conceive of a number of job functions using electronic data processors or similar machines which could result, on the facts of particular cases, in results very different from those we have reached in this case. Each matter must stand upon its own facts and be related to its own industry."

[2] Letter from The Star Chapel, signed by N.W. Stanbury, Chapel Clerk, November 26, 1982.

the Journalists' Union view - the best defence against displacement by new technology was for workers to co-operate to protect jobs.

Delay in achieving a negotiated settlement with employers seemed likely to produce pressure from some members of the Journalists' Union for a change in its policy over direct-inputting.[1] Already there is division over the issue. It is apparent that some journalists in the north want the right to exploit the technology to the fullest.[2] They say "it's like having a Rolls Royce in the garage and not using it". Another reason for wanting to adopt the new technique is the need for familiarity with the technology given the desire of some journalists to work overseas where direct-inputting is already established.

In May 1983, a weekend conference concerned with the latest wave of technological change in the newspaper industry was held in Wellington between members of the four unions - journalists, printers, clerical workers and photo-engravers. The conference recommended that joint site committees be formed or reactivated so that unions could work together "from the shop-floor up" to control the introduction of future changes being suggested by employers.

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[1]The Printing Union has sought support from the journalists to 'spell out' in their Award that they will not direct-input. The Journalists' Union is not prepared to do so, since, in the words of an official, "a scab union could always come in and pick up the work if neither union has clear coverage of the work".

[2]The policy of the Northern Journalists' Union, however, remains the same as that of the Journalists' Union (NZJU); The New Zealand Journalist, August, 1983.

However, it became clear that the Printing Union's Executive remained firmly committed to an individual, rather than an industry-wide, union strategy in its approach to employers.[1]

5. Conclusion

In the final section of the chapter I showed how the interaction of contradictory and common interests among groups of employers, journalists and printers shaped the job structure associated with the typesetting, editing and composing of editorial material at The Star. The evidence also shows that these patterns of conflict and alliance are shifting, as pressures for change intensify.

Like the printers and journalists, employers were divided over the appropriate strategy to adopt on the issue. Evidence from a variety of sources during 1982 suggested that employers were keen to proceed with direct-inputting, but in the words of a union official, "each employer is not wanting to be the first to put his toe in the water". Because of the Printing Union's response, employers are faced with the problem of whether "to drive the Printers' Union out" or whether "to buy them out", as the official put it. A third possible scenario suggested by a sub-editor at The Star was "a battle of attrition between employers and printers" with the union growing weaker as numbers decreased. In time, he felt, "newspapers will do away with printers altogether".

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[1] As one of the Executive put it in response to a question from the Conference floor, "there's no possible way that the printers can negotiate their members' jobs away - not if they're going to lose two-thirds of their [type] setting staff".

In May 1983, the NPA's Executive Director, D.J. Patten, made clear the Association's position on the issue. He told the newspaper unions conference that the NPA wished to have discussions with the affected unions collectively or individually on direct editorial input - and preferably on a national basis. The NPA agreed that change should come "through consultation and negotiation, not through confrontation or imposition", and acknowledged that detrimental effects including job loss and deskilling should be kept to "the absolute minimum". In addition, the NPA wished to discuss how the benefits from the technology should be shared. In emphasising the importance of technological change for the viability of the newspaper industry, Patten drew attention to the increasing pressure of competition for advertising revenue - particularly from such sources as the cinema, direct mail, outdoor posters, and private television.[1] The issue of direct-inputting surfaced publicly again in October, 1983 when Patten was quoted as saying that employers wanted to start making the changes in the next six months, and the NPA had asked for meetings with the Printing and Journalists' Unions for discussion.[2]

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[1]On November 18, 1983, the management of NZ News Ltd announced the redundancies of 67 staff at the Auckland Star because the newspaper had been "in loss" for some time (The Press, November 21, 1983).

[2]A meeting was held in Wellington on November 3, but no significant developments appeared to have occurred.

Shifting patterns of conflict and alliance among and between the differing groups will determine the future organisation of work associated with the processing of editorial material in New Zealand newspapers and, in particular, at The Star. As occurred in the conflict between employers, printing tradesmen and non-journeymen TTS operators (examined in Section 3 of this chapter), the nature and extent of labour-market segmentation will play a crucial role. In this instance, the outcome of the 'joint newspaper unions' strategy will be critical. Moreover, should a demarcation dispute be precipitated, the state may again have a part in determining the allocation of work between the different occupational groups - as was the case with the new job of plate-making, discussed in Section 2. At the same time, competition among employers - within the newspaper industry and within the media generally - will continue to shape the strategies adopted by newspaper proprietors over the issue.[1]

Part Three, which follows, examines the outcome of the process of struggle for control over the technology examined in Part Two - particularly the effects of the process on job content and potential deskilling. Because of the conceptual link between 'control' and 'deskilling' discussed in Chapter 3, the implications (both empirical and theoretical) of the struggle - for an analysis of the labour process - are assessed in the concluding part of the thesis.

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[1] See Section 2(c) of this chapter.

PART THREE

THE EXPERIENCE OF CHANGE

INTRODUCTION

In Chapter 3 of Part One I examined early fieldwork in the light of the research questions generated by the work of Braverman. Events in the field, together with more recent criticisms of labour process theory, suggested the need for a more adequate conceptualisation of the deskilling thesis. In Part Two, I explored the social process determining job structure and organisation at The Star following technological transformation. Part Three of the study examines the consequences of that process for the job skills of the men and women affected, providing the empirical basis for an analysis of 'skill' which takes account of both objective and subjective factors.

In Chapter 7 I show that Braverman's deskilling concept has utility, but that the process of deskilling is more complex and uneven than he suggests. In addition new skills are created and old ones upgraded - an outcome of technological change which the deskilling thesis minimises.

Moreover, Braverman's analysis relies solely on an objective conceptualisation of 'skill'. Chapter 8 provides detailed evidence of the way in which skill is socially constructed on the basis not only of job content but also of ideological assumptions arising from gender-defined socialisation and sex-stereotyping of occupations. Thus even if jobs are upgraded, male workers may feel deskilled because they see and experience their changed jobs as inappropriate for their gender.

Concern with subjective perceptions of changes in the labour process also leads to a consideration of changes in the physical conditions of work which accompany technological innovation - conditions neglected by focusing exclusively on the phenomenon of deskilling. In Chapter 6 I contrast the workplace at The Star before and after the move into cold-type production. This provides an appropriate context for the discussion in the following two chapters. One of the points which emerges in this chapter, and is taken up in Chapter 8, is that the nature of the changed physical environment influences the tradesmen's subjective perceptions of deskilling.

CHAPTER 6

THE PHYSICAL ENVIRONMENT

In Chapter 6 I examine the changes in the working environment of the composing room and the photo-engraving department (Sections 1 and 3 respectively), and the response of the printers and photo-engravers to this transformation (Sections 2 and 4 respectively). While the rotary department was affected to some extent by technological change, the former two departments underwent the most significant transformation. Typically, employees in each of these departments were pleased to see the end of the dirt, heat and noise associated with production techniques under hot metal. Even when the loss of the traditional job was spoken of with real regret, the men typically responded favourably to the improved working environment. Although instances were given of the dangers associated with hot-metal equipment and processes, printers were less likely to mention these than to mention the discomfort of the heat, noise and dirt.

1. The Comp Room

(a) Hot Metal

The following description is a composite picture of the environment of the composing room before the changeover to cold type. It has been drawn from interviews with the men who worked at The Star during the days of hot metal, photographs taken there before the transformation, and

from the waist up because of the heat. The comps or stonehands wear dark-blue aprons to protect their clothing (see Plate 5, p.36). Their finger-nails and hands are blackened from handling galleys of proofed type.

The curving pipes of the grey Lamson tubes[1] carry copy to and from 'the box'[2] where the printer distributes 'takes'[3] to the lino operators. An apprentice compositor goes over to the 'bulk'[4] where he puts the 'leading'[5] between the lines of type. A completed page, locked-up in its metal chase, is wheeled on a heavy trolley (see Plates 6 and 7, pp.37, 39) across the concrete to the Hoe,[6] where a cardboard mould or mat will be made. The steady noise from the linos yields to the hammering of the metal on the stone, as the work of setting the type diminishes, and making-up the page takes over. There is a growing sense of urgency as the day wears on.

(b) Cold Type

When The Star changed over to cold type, the comp room was transformed into three main areas: the terminal

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[1] Pneumatic tubes used to distribute copy from one department to another.

[2] Central point for collection and distribution of copy from editorial, advertising and proof-reading departments.

[3] Manageable amounts of copy (usually three or four sheets) which were handled at one time by an operator working to a deadline.

[4] Where lines of type of different point-size were combined.

[5] Lead spacing material.

[6] Equipment used to make an imprint of the metal page for conversion into the metal plate.

room, paste-up, and the computer room. The contrast between the two work environments is illustrated most vividly by comparing the view of the composing room under hot metal (Plate 13) with that of the computer room (Plate 9, p.42) which is now located in the area shown in the foreground of Plate 13 - the area where the stone-hands are making up the pages.

The rectangular terminal room has banks of fluorescent lights, pale green and white walls, and is enclosed in glass. Brown carpet-squares tile the floor. Computer terminals sit on desks spaced comfortably apart.[1] Each desk has an 'upstand' behind the terminal, which partitions operators from each other and is used to display notices and check-lists of computer codes.

Out on the tiled floor the comps work on paste-up, still standing as they used to at the stone, but now they make up the pages on sloping wooden 'frames' rather like a draughtsman's drawing table. Upstands at the back are used for displaying layouts from the subs and for holding any 'forward' copy not required for the current page.[2] The men use small scalpels to cut away the columns of copy for paste-up. Periodically comps walk across to small units which dispense melted wax on rollers. There they coat the backs of the bromide strips before returning to their frame

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[1] Plate 10 (p.44) shows computer terminals in use during the early months of the transition to cold type, before a separate 'terminal room' was constructed and special desks were made to accommodate the new equipment.

[2] Plate 14 (p.169) shows the frames, with the upstands (in the background) still under construction.

PLATE 13: General view of the comp room showing stonehands at work (foreground), type stored in galleys under the benches (centre) and linotype machines in the background.

PLATE 14: A compositor working at a printing frame, with the upstand still under construction. (Hot-metal equipment is shown in the background.)

to fix the copy to the layout page. Since the process is entirely clean, the men no longer need to wear navy-blue aprons to protect their clothing, although some still do.

In one part of the comp room behind the paste-up area is the computer room enclosed in glass. It is air-conditioned to maintain the equipment at a constant temperature, and the floor is tiled. Computer equipment is stored in two duplicate sets of four cabinets containing the central processing unit, memory, disk drive and storage and the interface with the two APS phototypesetters which are also stored in cabinets. Two control keyboards, a computer printer and one or two terminals complete the computer room equipment. There is a steady but low hum from its operation. At one end of the computer room is the dark room in which the negatives are processed into bromides. These emerge through the automatic processors into the comp room itself, to be divided into sections of copy for pasting on the appropriate page.

I turn now to examine how the printing tradesmen, former linotype operators and hot-metal compositors, responded to their changed work environment.

2. Responses to the Changed Environment

The comp room in the days of hot metal was hot, noisy, dirty and potentially dangerous. Reflecting on the changeover, printers usually volunteered comments about some unpleasant aspect of their former work environment. The following are illustrative of these comments.

(a) Heat

Typically, the comp room was described as a hot place to work in. Heat was generated mainly from the 'pots' attached to the 35 to 40 linotype or linecasting machines in which molten metal was maintained at temperatures of between 260°C to 275°C. During fieldwork (on an unusually hot February day in 1981), the terminal room was noticeably uncomfortable, but I was told that although "it might be hot now, it was twice as hot before [under hot metal]". Reflecting about the old system, Fred commented, "mostly the heat worried me". He went on to explain that the temperature "had got up to 100°F (38°C) at times until the air conditioning was improved".

Not all references to the heat of the metal pots were negative however. The pots were described by a TTS monitor at The New Zealand Herald as being ideal for warming pies - "one hour on top, on greaseproof paper. It did it to a turn, just like home." A comp also spoke of talking standing over the pots in the winter. "We used to do that to keep warm," he explained.

(b) Danger

Apart from the heat from the molten metal, there were also dangers of lead poisoning from the fumes. As Ken put it, "some morning's you would come in and you could see the fumes". In addition, the printers handled the lead slugs in setting and composing the type, and lead could be ingested through the pores. Comps, in particular, handled metal continuously as they made up the pages. Downstairs,

in the stereo department, stereotypers carried the metal plates and placed them on the conveyor which carried the plates to the units of the press. Stereotypers also worked beside the large open pot in which metal was kept in a molten state (Plate 15, p.173). Harry, a former stereotyper now working in the rotary department, described it this way:

> *The amount of fellows who used to get lead poisoning ...! You'd feel very down, very lazy [when you had lead poisoning]. You couldn't drink alcohol, and with the heat [of the metal], 650°F[1] on a 31°C day!! [that really hurt] - the heat was atrocious!*
>
> *People might be sick for five, six or seven weeks at a time. One fellow was off about two months with lead poisoning. Practically everyone [in the Department of 13] had traces in their blood [when tests were done.]*

A further danger from the molten metal was the possibility that it could spit up if any moisture was present. Harry explained that if the plates were left around, got damp, and then were thrown into the pot for re-melting, hot metal would splash up. Some metal spat in his eye on one occasion and he had to seek treatment. He believed he could have lost his sight if the metal had gone into the centre of his eye.

Jim, who works as a compositor, also spoke of the danger from water being combined with lead. Any spills of water could empty the pot and spray metal everywhere. He spoke of the time water bombs were being thrown round near the linos. "Of course, this was strictly forbidden,"

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[1] 343°C.

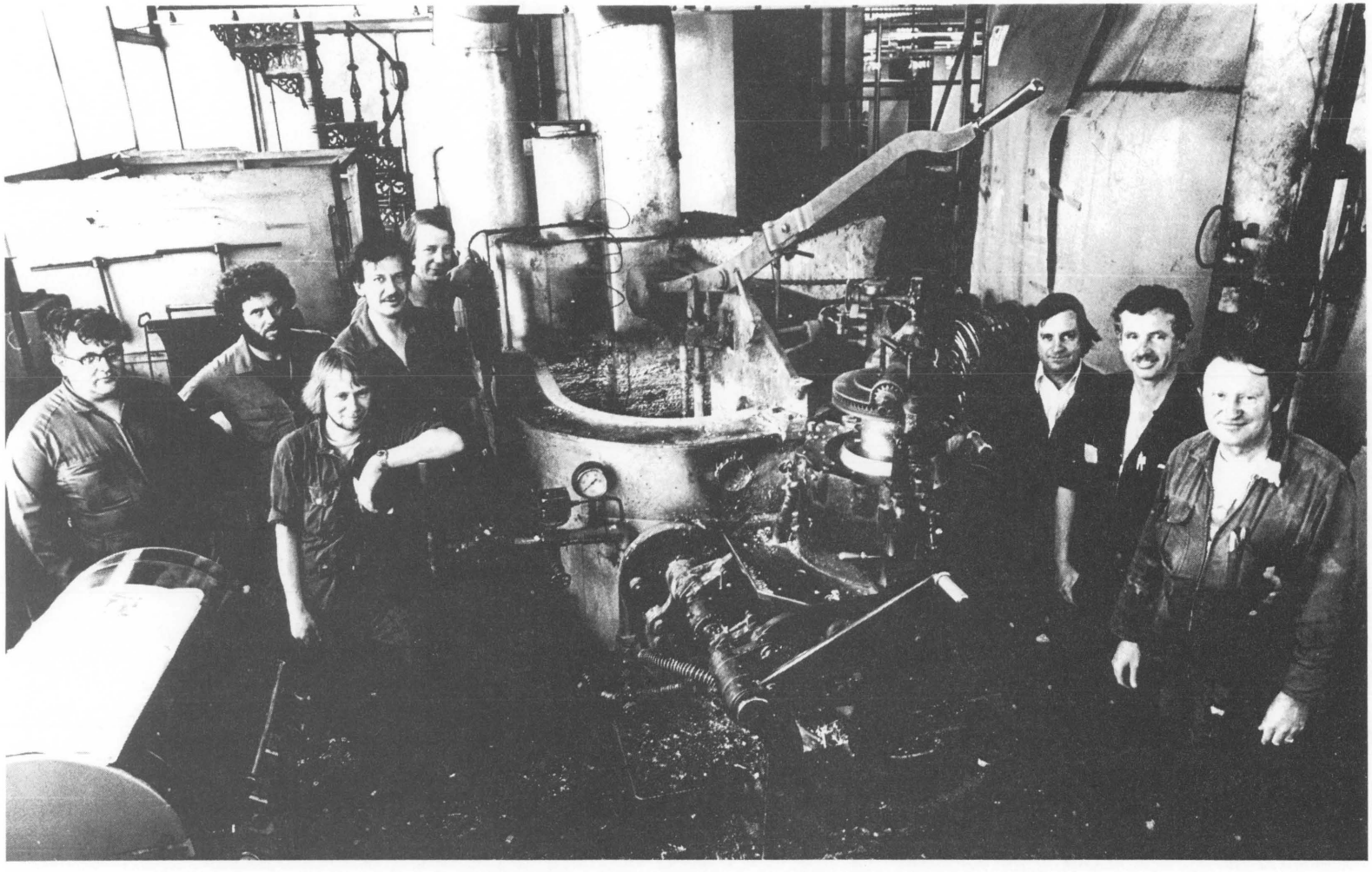

PLATE 15: Stereotypers standing beside the large open pot of molten metal from which the plates were made.

he grinned, "but if one had landed in one of the pots...!!"

Commenting on the changeover to computerised typesetting, John, a former comp, noted on one occasion that what had been eliminated were the health problems associated with the heat, dirt, noise and lead. He went on,

> *And there's always danger around unguarded machinery - which linotype machines had to be. We had a few close calls. For example a heavy metal trolley [carrying a forme] which fell, and would have killed the guy who managed to lie flat and avoid being crushed.*

Another comp spoke of cutting metal up with circular saws (see Plate 16, p.175).

> *This we did regularly. For example slugs of 9 ems[1] were cast when 8 ems were required. We should have used the guards [on the saws] but you used to get cocky and leave them off. It was quite dangerous.*
>
> *Most of the accidents [however] happened on 'pull up' [proofing the copy]. The rollers [printing rollers] were operated by the feet. Sometimes you'd take your foot off too late and the rollers would continue and run over your fingers. The result was the loss of a finger-nail. The only danger <u>now</u> is with the scalpels. You get nicks on your fingers.*

(c) <u>Noise</u>

Ted, a linotype operator in his fifties, reflected on the level of noise in the comp room in the days of hot metal. "Before, it was a real clatter. Nowadays it's like walking through a library." The Production Manager,

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[1] A system of measurement relating to the width and height of type.

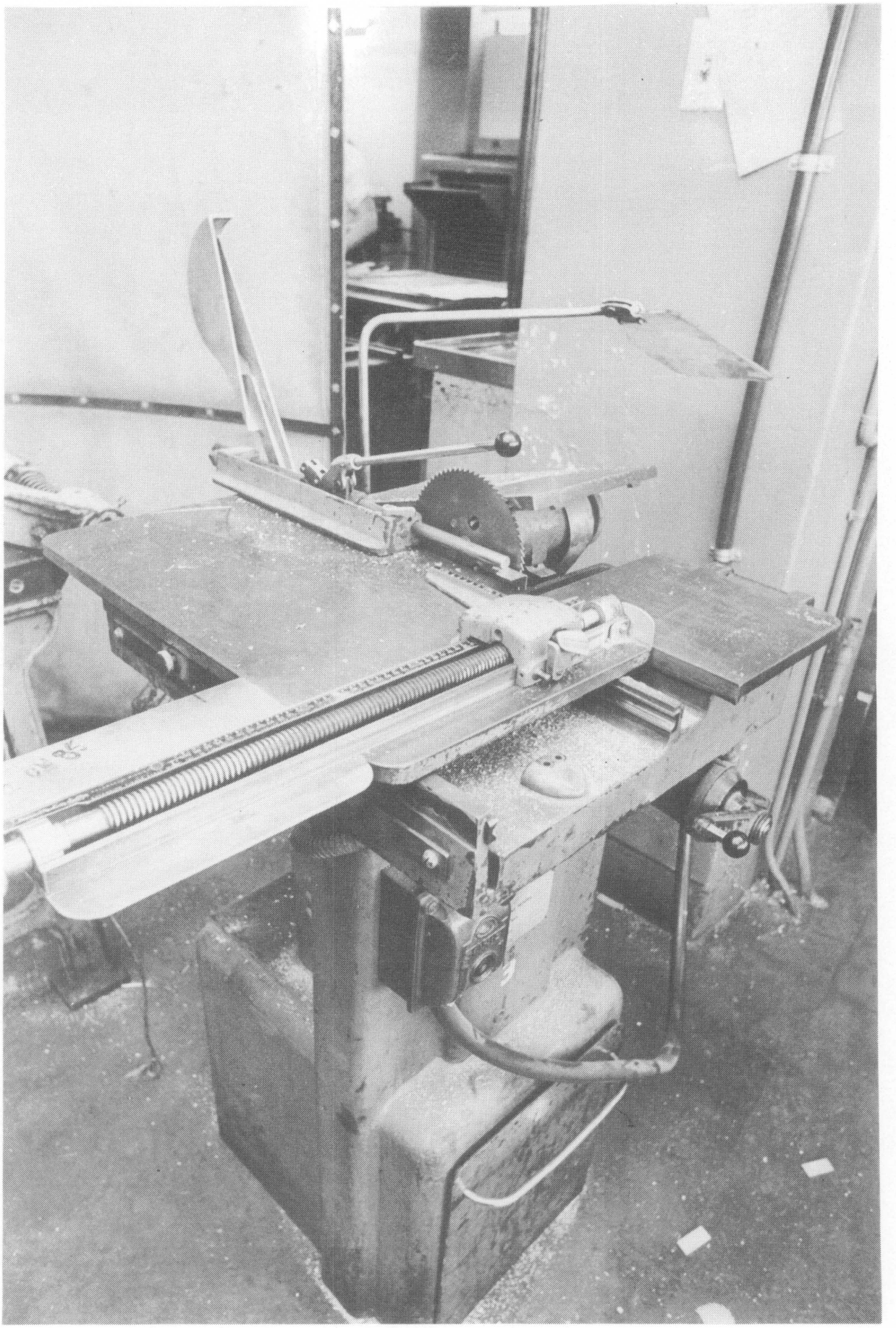

PLATE 16: Circular saw used to cut slugs of metal from the linotype and linecasting machines.

noting the absence of noise after the move into cold type, put it this way:

> *I'd had so many stop-work meetings [with the negotiations over the introduction of the new system - discussed in Part Two] and the paper was coming out late and I was getting rapped over the knuckles from management. For the whole of the first week after the [final] change I kept thinking: 'oh no, they're [the printers] having another stop-work meeting' and going out into the composing room to check. Then I'd remember!*

In the computer room on one occasion, I had difficulty hearing a system controller sitting at some distance from me. I asked him to repeat himself as the noise of the computers in the background made it difficult for me to catch what he said. He replied: "It's not a tenth of what it used to be before."

Noise levels were high enough to have permanently affected the hearing of some of the printers and this was quite noticeable, particularly among the older printers. For example, a linotype operator due for retirement within the near future explained, in an interview reported in the Christchurch Star,[1] that the constant noise of the machines about him had spoiled the upper register of his hearing. He said he can work beside a jangling telephone bell now without hearing it.

Not all printers objected to the noise of the linos, however. For example, one former linotype operator recalled that he liked the "clanking away - you became associated with the machine".

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[1] March 11, 1978.

(d) Dirt

Dirt was another factor frequently referred to by the printers. For example, Clyde said that one of the things he used to dislike about hot metal composing was that

> *you had to wash your hands for 15 minutes after work. To have an orange, you left black on the flesh. With sandwiches, no matter how much you washed your hands, they would still leave finger prints on the bread.*

Rod, an ex-operator, said that the thing he likes about the new system

> *is not having to wash my hands before I do anything, and having to put a coat on [to cover his clothes]. My shirts used to be dirty - [you'd get] ink, grease, [on them] even [working] on the linos.*

In addition, the metal space bands[1] were cleaned every day with graphite. As Roy put it, "you'd blow your nose and your hanky would be full of graphite".

Before the move into cold type, the men from the comp room were not able to have their morning tea in 'the caf'. "We were too dirty because of the lead and everything," one of the comps explained. "We used to sit amongst all the lead, dust and crap and eat our morning tea."

The other production area that changed markedly after May 1980 was the photo-engraving department,[2] which is discussed in the section that follows.

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[1] Used to create variable spaces between letters and words.

[2] The name persisted for some time after the changeover, but more recently the department has been referred to as 'process' or 'plate-making'. However, for consistency, the hot-metal term is retained in the thesis.

3. Photo-engraving Department

(a) Hot metal

The following description of the work environment, like that for the comp room, is a composite picture drawn from conversations with the men, photographs and observations of photo-engraving processes in two other newspapers.[1] There were three branches of the trade before the change to photolithography - camera operator, plate-maker and etcher. The camera operator performed three main operations: he reduced or enlarged the photo to the size required for the page, placed a screen of dots between the camera and photograph,[2] and adjusted the lighting to ensure even illumination. Then he made a negative of the photograph composed of dots of varying sizes providing the tones of the original.[3]

In the plate-making process, zinc plates were placed in a sink, sprinkled with white pumice powder and the surface roughened in a circular action with a hand-held brush. The plate was then dried automatically before photosensitive glue could be applied. The plate-maker brought the negative into contact with the pre-sensitised plate under a glass frame, rotating it 180° to expose it to light. The light burned through the light parts of the negative, hardening the surface, but was unable to

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[1] The New Zealand Herald and The Press.

[2] Without the screen, there would be no intermediate tones (only black and white) when the photograph was reproduced in the paper.

[3] For 'line drawings' no screen was involved since only black and white contrast was required.

penetrate the opaque parts.

The plate was then put into a bath of highly dangerous, corrosive, chromic acid to harden the image still further, before the unexposed glue was washed off in the sink. Before the etching process could begin, the plate-maker baked the plate in a 'burning-in' oven, to produce an acid-resisting surface. After cooling, the plate was immersed in a de-scumming bath of dilute sulphuric and nitric acid mix.

Finally, the etching was done in mechanical baths. Acid was automatically piped in after the etcher had added water and oil. He then fixed the plates in place under the lid of the bath, and paddles automatically stirred and emulsified the acid and oil mixture. This etched away at the uncoated, non-hardened surfaces of the zinc, leaving the image in the form of raised dots or lines. The oil, driven at speed up against the edges of the image being engraved, prevented or slowed down the rate at which the acid ate into the sides and undercut the image. The etcher weighed the plates before and after the acid bath treatment to determine how much acid was needed to replenish the bath as the day wore on. 'Topping-up' was done manually using 2-litre jugs to carry the acid.

A green pall of acid fumes hung over the etching room at The Star. Although the room was separated from the other sections of the photo-engraving department, fumes obviously escaped since camera equipment next door showed signs of acid attack. The fumes corroded and rusted metal surfaces, and cracked the plaster off the walls. There were

occasional spillages when pipes, bearing the acid from bulk storage, corroded. The brown and cream-tiled floor of the etching room was rusted and eaten away by the acid.

(b) Cold type

Five banks of yellow fluorescents light the converted photo-engraving department. In the centre are the giant 'Brownie' (or paging camera), and the attached dark-room and processor (Plate 12, p.48) - equipment which is used to photograph and process the pasted-up pages. The nearby 'light' table has a glass top which is lit from beneath to enable negatives of the page to be touched up by hand. Two printing frames stand beside it. These are used to expose the negatives to the aluminium printing plate by means of an ultra-violet light. In front of the printing frames are two plate-processors which automatically develop, wash, gum and dry the plates to prevent oxidation. Used negatives and photographed pages are stored in banks of narrow drawers labelled by page number. The radio is on. The plate processors are noisy, and while work is underway there is little chatter.[1] The atmosphere, like the floor tiled in squares of cream and brown, is 'clean'. The contrast between the environment of the photo-engraving department under hot metal and cold type is illustrated by comparing the etching room (Plate 17, p.181) with the view of the new department, shown in Plate 12, p.48.

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[1] A detailed description of the operation of the new equipment is contained in the following chapter.

PLATE 17: View of the etching room showing acid in a covered jug and heavy-duty rubber gloves (foreground), and a photo-engraver beside a mechanical bath in which the zinc plates were etched.

4. Responses to the Changed Environment

The photo-engravers, like the printers, generally preferred the cleaner working environment associated with the new process. Those who had worked as etchers spoke of the noise of the mechanical baths and of the green pall of acid fumes which hung over the etching room. One of them noted that

> *The ventilation system couldn't cope, particularly when the wind was blowing in one particular direction. You didn't see a fly in here. They'd just come in and go straight out. Germs didn't linger.*

A young photo-engraver, who had worked as an etcher, spoke of the sore throats he used to get working in the acid fumes. "If you had a cold it was a lot worse." Another talked of a calendar in the etching room:

> *Towards the middle to the end of the year, if you touched it [PAUSE]... Well, when you were pulling down 'December' it would just snap and crumble to pieces . You can imagine what it did to our lungs.*

Unlike the printers, the photo-engravers spoke more frequently of the hazards of the job under hot metal. Gordon, who had been in the trade for 20 years, said that there was "a lot of tension in the department all the time" when acid baths were in use. Warwick agreed that the acid baths were dangerous. "You had to be very careful," he said, and added that he had been splashed a couple of times. Once a jug he was using to transfer acid into a bath caught the paddle and tipped the jug, splashing him. Greg explained that "you had to add acid to the water, not the other way round". Once, he was rinsing out a jug which had contained acid and it splashed up and touched the surface of his eye.

There were other accidents "due to human error". Taps were left on and acid baths over-flowed. A puddle which a photographer walked through, thinking it was water, turned out later to be acid. He discovered this when he saw that the soles of his shoes had been eaten through. Philip also commented that the acid "was very hard on clothing. It used to go through clothing. With leather shoes, the stitching would be just rotten." He, like the others, had odd acid burns, and he showed me scars on the backs of his hands. A shower had been installed he explained, and this was vital in case of a major accident.

5. Conclusion

In this chapter I have shown that the improved working environment of cold-type production was a significant factor in the tradesmen's experience of technological change. This aspect of change is neglected by analysing the labour process solely in terms of the concept of deskilling. One consequence of taking environmental change into account is to make the researcher guarded about accepting simplistic conclusions about the effects of new technology. For example, in Zimbalist's view, Labor and Monopoly Capital provides

> *both a theoretical and empirical basis for undermining the claim that new technology washes away boring, routinized, and dirty jobs and erects in their place interesting, challenging, and clean ones. (1979:xi)*

The evidence reviewed in this chapter supports an alternative view - at least with respect to the claim that new

technology does not replace "dirty jobs" with "clean ones" (ibid.).

However, while the evidence shows that the new technologies significantly improved the working environment of both the composing room and the photo-engraving department, this conclusion needs to be qualified. Firstly, the comparison contrasts a system in which equipment is being operated towards the end of its natural life with one employing new design and equipment. For example, the extent to which the acid-etching process affected the working environment depended in part upon the original design of the photo-engraving department and the age of the building.

Secondly, it is true that cold-type production techniques have eliminated the heat, dirt, noise and lead associated with hot-metal production,[1] but in their place another set of health problems may be emerging. Fieldwork evidence is insufficient for reliable conclusions to be drawn, but there seems to be some grounds for concluding that operating VDTs (or visual display units) for long periods at a time can be associated with eye problems and headaches.[2] This is consistent with findings from recent overseas' studies,[3] but appears to be partially at odds

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[1]Note, for example, Hill's comment (1981:113) that "Automation [is] ... a second solution to the human problems which previous transformations of the work process had presented".

[2]See Chapter 10, pp.345-346.

[3]For example, see news reports of studies carried out in West Berlin, Canada, France, Britain and Australia; The Australian July 25, 1982; and The Press October 6, 1983.

with conclusions from a 1980 New Zealand study.[1] At the Newspaper Unions Technology Seminar in May 1983,[2] Secretary of the Journalists' Union, T. Wilton, summarised the available evidence in this way:

> *Users of VDTs appear to have a higher incidence of eye, musculo-skeletal and other stress-related problems than other office workers. There are also some reports of a higher rate of miscarriage and birth defects in some areas.*
>
> *There is little or no solid evidence that VDTs actually cause these problems.*
>
> *There is no evidence that they don't.*

Since VDTs have not been in widespread use long enough for potential long-term effects to become apparent, Wilton argues that unions should take all possible steps to prevent or minimise the problems (ibid.). At the same Seminar, former FOC of the Photo-Engravers' Chapel at The Star, D. Smith, commented,

> *We have lost the fumes from the acid baths [and] the smells ... [but we've] ended up working in a yellow environment. We have trouble with our eyes - the glare, the headaches...*

Although the evidence in this chapter strongly suggests that, overall, the technologies considerably improved the work environment, in the following chapter I describe the boredom and tedium experienced by the men who operated the new automated plate-making equipment and worked on the paste-up process. Moreover, in

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[1] The report of the Department of Health (1980:71) on a study of VDU usage concluded (among other things) that "No evidence was found in this survey to suggest that VDUs pose a major health problem to those using them. Certain symptoms were found to be more prevalent amongst VDU operators than in the comparison group."

[2] Wellington, May 14-16, 1983.

Chapter 8, I examine the way the new technologies affected the men's identity as skilled tradesmen - an identity which, in significant ways, was influenced by the very environment which created the hazards described in this chapter.

CHAPTER 7

DESKILLING OF WORK

In the present chapter I use Braverman's deskilling concept to analyse the changes in the jobs of the photo-engravers (Section 1) and the compositors (Section 2) - changes which were the outcome of the social process explored in Part Two. The evidence shows that, although each job has been objectively deskilled, the process of deskilling is more uneven and complex than Braverman's thesis suggests. Furthermore, reskilling occurred in the jobs of several occupational groups, in particular the jobs of those men who were retrained to develop and control the new computer-based production system (Section 3).

1. Photo-engravers

(a) Changes in Job Content

Earlier chapters[1] have shown that, under hot-metal production, photographs and line drawings[2] had to be converted into photo-engraved zinc blocks for reproduction in the newspaper. There were three branches of the photo-engraver's trade corresponding to the three main stages of the process: camera operator, plate-maker and etcher. The camera operator produced a screened negative of the photo reduced or enlarged to the required

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[1] See Chapter 2, p.38, and Chapter 6,

[2] Illustrations.

size; the plate-maker transferred the image on the negative to a pre-sensitised zinc plate hardened to form an acid-resisting surface; and the etcher put the zinc plate through an acid process which etched the uncoated, non-hardened surfaces of the zinc, leaving the image in the form of raised dots or lines.

Although the work now done by the retrained photo-engravers incorporates aspects of their traditional trade, it has been significantly transformed. Camera-operators[1] still produce negatives from photographs and line drawings but these are now processed automatically rather than manually. The work of both the hot metal plate-maker and etcher has disappeared. In its place, aluminium plates of an entire page of the paper are produced by the retrained photo-engravers in the photolithography process described previously.[2] The most significant changes occurred in the work of the men who operate three new pieces of equipment: the 'paging camera' (or 'giant Brownie'), the printing frame or plate-maker, and the plate-processor. During the early research period (October 1980 - April 1981) observations and conversations with the nine men who worked on this equipment at that time revealed the nature of the deskilling that had occurred.

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[1]Four or five former hot-metal photo-engravers worked as camera operators. The number varied depending upon the day's work-load, and 'days off' and 'holiday' rosters.

[2]See Chapter 2, p.47.

The paging camera produces negatives of entire pages of the paper for conversion into aluminium plates. When the page arrives from the comp, the camera operator runs his eye over it as a double check for errors and to see whether all the display ads are of a good standard for reproduction. First he measures and marks the page as a guide, then he places it under a glass frame correctly positioned for automatic reduction when the page is photographed.[1] If exposure time has to be altered - to correct for poor quality of display ads, for example - he adjusts the setting on the paging camera accordingly.[2] The camera operator then presses two buttons, one to clear the system and set the equipment in place to produce the negative, the other to dispense the film and start the process. The various steps - exposure, developing, fixing, washing and drying - are all carried out automatically in one continuous electronically-controlled process.

As this description shows, operator discretion is minimal. Referring on one occasion to the need to teach someone to use 'the big camera', Phil commented:

> *I wouldn't want to train them on the 'Box Brownie'. It's only got four variations in size, then all you do is press buttons and the machine does the rest. You wouldn't want to be on one all day. [Pause] In one day you'd make about 40 negatives. Standing there and making them, all automatic.*

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[1] This is a technical requirement of The Star's production system.

[2] Less frequently, the aperture setting may require adjusting.

I questioned Kit, who usually operated the big camera, about his work.

> *Q: What are the differences between the kinds of decisions you had to make before in your work, compared with now?*
>
> *A: It's hard to think of it that way. I see it that I used to think of myself as a relatively skilled tradesman. Now, I operate a system.*

In describing the changes in his department, Geoff put it this way: "You could bring someone in off the street, and in a morning they'd know how to operate the equipment here." As he saw it, "photo-engravers [working under hot metal] used their hands to create the work". He compared this with a carpenter with his hammer and saw, and added, "now the machines do it for you".

Gordon spoke in similar vein: "The machines do so much for you now". He referred to the three branches of the trade under hot metal: etching, camera operation, and plate-making. "Etching has gone completely. That involved some skill," he said. The removal of the zinc in an acid-etching process could be controlled by alterations to 1) temperature, 2) time of immersion, 3) revolutions of the machine, which increased or decreased agitation, and 4) the make-up of the acid and the emulsifying oil. These factors were varied according to the depth of the metal of the block, and whether the photograph was 'half-tone' or 'fine screen'.[1] Since the process was

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[1] These terms refer to techniques used to vary the dot size which produce variations in tone (highlights and shadows, for example) in the photo when it is reproduced in the newspaper.

variable the plates could be ruined by 'over-etching' or 'under-etching'. In the former case the acid could cut under the edge of the image, damaging it, and in the latter, the image would not print up.[1]

Now, etching has disappeared completely and the process which has replaced it involves operating the automatic plate-maker and plate-processor. The following field-notes illustrate the extent of automation:

> *Gordon is operating the machine which converts negatives to aluminium plates. He takes an unexposed aluminium plate and puts it under the negative beneath glass, securing it in place so that punched holes in both the plate and negative are aligned over two metal knobs. The vacuum control mechanism is then activated by a switch, and the negative, plate and glass come into contact. Gordon manually rotates the top of the machine 180° so the negative and plate are exposed to ultra-violet light. After two minutes a light switches on to indicate that the exposure is complete. The top of the machine is then rotated back again manually and the negative and plate removed. Gordon files the negative in a drawer labelled with the appropriate page number.*
>
> *The exposed plate is then placed against the first set of rollers on the plate-processor. This activates a trip switch which commences the machine's cycle. The plate travels between a series of rollers, and the developer and fixer are distributed automatically across the surface of the plate. Brushes ensure a thorough coating. The plate is then washed and dried before it emerges at the other end of the machine.*

From the first visits to the photo-engraving department, dissatisfaction with the new labour process was immediately apparent. Because of the 'peak and valley'

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[1]The men spoke of other aspects of the photo-engraving process which were variable. For example, in the plate-making stage, one of the men explained that "if the original sensitising wasn't completely covering the surface, or you could get a bad batch of sensitiser, then you could lose some of the image".

nature of newspaper production, the seven or eight men[1] - whose job it was to process pasted-up pages of the day's paper into aluminium plates[2] - were experiencing long periods of 'down-time'.[3] These periods of enforced inactivity contributed to the boredom with the machinery which the men spoke of, and which I observed.[4]

The following exchange occurred as I walked into the department at 10.55 a.m. early in February. Several of the men were leaning or sitting propped up on stools at the 'light' table used to touch up page negatives before processing them into plates. The men were drawing or reading, and one was painting model soldiers. We exchanged comments about their various activities:

Gordon: *Of course, officially, we're not supposed to do this.*

Q: *What else could you be doing?*

Gordon: *Falling asleep.*

About 2.15 p.m. that day, Phil was reading the paste-up of the front page which had been photographed, while Warwick worked on a last plate for the 'Home Extra'.

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[1] Again, the number varied depending upon rosters and work-load.

[2] Work for The Star's four community newspapers also had to be processed when the machines were not required to produce the day's paper.

[3] Periods spent waiting for the next page of paste-up to arrive.

[4] Work in that department during the early months of fieldwork was also characterised by several factors: 1) The new production process had been running since May 1980. Each of the men involved in plate-making had learned all he needed to know about the new equipment and technique. Many of the 'bugs' had been tracked down and corrected; and 2) Advertising volume appeared to be down, and papers were therefore smaller than usual.

Greg was touching up a negative. Tim cleaned up, washing the remains of chemicals off one of the plate-processors. Gordon was just standing, staring.

Q: *Do you have a roster? Is any particular person rostered for any particular job?*

Gordon and Greg (together): No.

Q: *How do you rate the jobs? [Pause] ... [I elaborated]. I mean in terms of which is the least difficult to the most difficult? [The question was obviously still unclear, but Greg's answer is revealing]:*

A: *No, the most boring to the least boring.*

Q: *What's the most boring?*

Greg: *The plate-maker, bending*[1] *and cleaning up.*

Q: *What's the least?*

Greg: *Going home.*

Observations and discussions such as these suggested that the effect of the new technology in the department had been to deskill the men involved in making the page plates. The contrast between operating the equipment in the new photolithography process, and the work of the traditional photo-engraver could be understood in Braverman's terms. For example, as Gordon explained it, the photo-engraver had a number of decisions to make based on his previous knowledge and experience with the technique. His discretion and judgement were needed to

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[1]The ends of the aluminium plates were bent up at right angles (using a simple press) so that the plates could be attached to the units of the printing press.

control the variables in the acid-engraving process. Operating the new plate-processor, by comparison, appeared to require no skill. Once an exposed aluminium plate was placed over the trip switch, the series of rollers carried it through the required stages automatically.

(b) The Deskilling Experience

As the quotations above suggest, this deskilling was experienced negatively by the men who operated the new equipment. Following an initial brief interest in the new process during the transition stage, they were bored and dissatisfied with the work and saw themselves no longer as craftsmen or tradesmen but as 'operators of a system'. Gradually, however, they adjusted and resigned themselves to the change. This process is illustrated in the following conversations.

Commenting on the changeover, Greg said that "at first it was very interesting." He explained that he trained later than the others.

> *Everything was different. It was like an underground community. Everyone else was running around. They seemed to know what they were doing. It was frustrating not knowing.*

I asked what changes Geoff had seen since the new equipment had been brought in. He reflected for a moment, then replied,

> *Some people who were easy-going changed. They were not aggressive, but just not so easy to get on with. They would complain more. People were restless, impatient [then he elaborated] - after about a week of being on the new equipment. This went on for about three to four months.*

He said one of the men tried to get another job on a couple of occasions. Another had "turned himself off". Geoff added that

> *I'd turned myself off like that [too]. The only other time I was like that was when I had a job at the freezing works. I'd turn myself off like a switch, go home mentally drained.*

On another occasion he spoke again of the way he felt when his work changed:

> *Mentally, it took quite a while to adjust to. I used to go home - I wouldn't want to do anything else. For two to three months I was really unsettled, tired. I lacked motivation to do anything. You became lackadaisical. I guess I was suffering from brain rot.*
>
> *There is a period of adjustment over time. You just have to accept it, or leave.*
>
> *Before I wanted to do things [at home after work]. Just the normal things in life. Your garden, your car, whatever. After [the change] you just didn't want to do anything. You became restless. I wanted to leave my job, go to Aussie.*
>
> *It reflected on my home life. I became irritable, moody. In the end, all the things I added to my life [to try to make up for the dissatisfaction at work] added to my irritability.*
>
> *If you can forget what it was you did before, maybe it gets easier. [After the change] people added up what we did and said 'oh yes, that's all very interesting', but it looks very boring - and that hurts.*

Like Geoff, Greg also felt keenly the response of others to his new job. He spoke of the tour parties that visit The Star and noted that one of the most often asked questions is "Don't you get bored here?". As he explained,

> *They pick it up in an instant. You feel like turning to them and saying, 'this isn't how it used to be'.*

Five months later, when I was again working in the department, I asked Kit how things might have changed since I'd last been in. He said one thing he had noticed was that "not so many of them [the men who worked on plate-making], wanted to do overtime when it was available". He went on,

> *That's understandable because of the tax structure, but I think it's more than that. I think it's the result of the technology.*
>
> *I know I need the money. You know you do - bringing up children you can always use extra - but now you just come in do your job and go home. I just want to get right away from the place. I only want to do the five days now. I need my weekends. I need two days off. Before, Sunday would be enough. Certainly the nitric [sic] acid fumes are gone, but somehow it's taken the motivation out of it [of the work].*

I asked Geoff a question similar to the one I had put to Kit. "How have things changed since I was first in?" He replied:

> *Some have adjusted, some haven't. I've got over my stage of fighting it. Work is not everything. It's a job. I get paid. I don't try to fight it now. You go through that, then you adjust.*

He explained that he had a lot of outside interests and that work "is only a small part of my life now. I can retire in 16 years. That's the way I look at it."

Conversations such as these reveal the nature of the response to the objective deskilling which had occurred. However, incidents of deskilling in this department (as in the comp room discussed in the following section) were not

as clear-cut as Braverman's theory suggests. Operating the new photolithographic equipment appeared to be a routine job when all was going smoothly. When problems arose, however, decision-making and judgement based on former trade skills and a sound knowledge of the new equipment were required. Given newspaper deadlines, such diagnostic skills had to be exercised under time pressure. For example, in the conversation referred to previously (see p.190) Geoff began by suggesting that with the changes you "could bring in someone off the street, and in a morning they'd know how to operate the equipment here". He went on to say that "it is only when something goes wrong that our skills are needed". Similar comments were made by the other men, and observations I made in the following weeks demonstrated that this was the case.

On one occasion about a month later, for example, discussion first thing on Monday morning centred on an incident the previous Saturday. Only three of the men were working at the time when the transporter in the big camera seemed to buckle the feeding edge of the negative and this meant it would not feed through the processor correctly. At the same time there was flooding from inside the processor. Geoff explained:

> *All three things happened at once. At one end, three films piled up on the transporter. Then at the other, three stuck in the processor. Then the developer or fixer started flooding. <u>One</u> of those would have been a disaster, but <u>all</u> happening at once...!!*

> *I had 25 pages waiting to go through. It was near the deadline for the first edition. We're like show business. There must be a paper. We can't say 'we'll think about it [the problem] tomorrow.' So I just started working slowly through, eliminating things ... [Reflecting on his former comments to me,] that's when your past skills are needed.*
>
> *When all three things happened at once I thought, 'do I leave and go home? Do I go to the pub for a jug?'.*

What he did was by-pass the transporter and feed the film through manually for each of the pages while someone else operated the machine manually inside. Then they turned to solving the problem of the flooding.

It was clear from conversations with the men that incidents such as this provided a welcome break from the monotony of routine operation of the machines. As Kit put it on one occasion, "You hope something will go wrong so you've got something to do". When he added "Of course you hope you can fix it", Greg interjected: "Or you hope you can't! It's much more fun then."

A second factor which needed to be taken into account in analysing the evidence of deskilling was that the volume and nature of the work handled by the department varied over time. As I suggested previously, the period covered by the earlier fieldwork coincided with a stage when the volume of work was down and paper sizes were correspondingly small. The relatively low volume of work contributed to the boredom the men experienced with the new equipment. In addition, commercial work or 'jobbing', which had been done under hot metal, had ceased during the changeover period. This did not re-commence until late 1981 when

computer personnel at The Star had developed appropriate software for commercial typesetting. Jobbing made a perceptible difference to the volume of work, and, as it involved 'colour work', it also added to the degree of skill exercised in processing plates. The extent to which this compensated for the deskilling which occurred is difficult to establish since systematic observations of this department ceased before jobbing work re-commenced. Available evidence suggests that the work is still experienced as deskilled relative to that of the traditional photo-engraver.[1]

While the deskilling framework was useful in analysing changes in the jobs of the photo-engravers, it is important to note that these changes were the outcome of conflict and alliance among and between employer and worker groups within the newspaper industry (Chapter 5, Section 2). A decision to retrain the stereotypers - rather than the photo-engravers - for the new plate-making work would have had different consequences for their jobs and skills.

The deskilling thesis was also useful in analysing changes in the jobs of the compositors, as the next section shows. Again, however, it fails to capture the complexity of the experience of technological change.

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[1]For example, a photo-engraver from The Star, in his address to the Newspaper Unions Technology Seminar in Wellington in May 1983, referred to the job in the following way: "Now we're like technicians looking after the machines which do the jobs we once did."

2. Composition of Type

(a) Hot-metal Techniques

Chapter 2 described how type was set in hot metal using linotype, TTS and linecasting machines, and how this type, together with photo-engraved blocks, was built up into metal pages or formes in a process called hand-composing.[1] This work was carried out by compositors and stonehands.

The formes were made up of type of different point sizes. Headings, in sizes ranging from 18 point to 144 point, were hand-set using Ludlow machines.[2] Different linotype machines were set up to produce type in smaller point size for 'intros',[3] double column material, 'cross heads'[4] and for the text of editorial (8pt) and advertising (5pt) material. Copy arrived in the box in the composing room where the printer sorted it, according to point size, for distribution to individual operators. As I indicated in the previous chapter, the printer allocated copy in 'takes', or manageable amounts depending upon the degree of complexity of the material and proximity of deadlines. For example, racing copy, which was boring to set, was split into a number of takes to avoid the inaccuracies likely to occur if one operator set column after column. A front page news item arriving

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[1] Section 2(c), pp.32-38.

[2] Plate 1, p.28. See also the following paragraph.

[3] Introductory paragraphs.

[4] Small headlines used to divide the columns of text of larger stories.

close to the Home Edition deadline was divided up into several takes and given to a number of operators so that the story could be set at speed.

Hand-composing involved a number of different tasks:

1) Compositors created display type[1] or headings by the traditional hand-setting method using a setting-stick and matrices of each individual letter to cast the metal type with a Ludlow machine.

2) A comp assigned to 'scrubbing' scrubbed off the loose metal from the type and broke the 'catch-lines' used to identify the takes of copy.

3) A 'make-up bulkhand' assembled the lines of type from the Ludlows, TTS and linecasting machines to make up the complete ad or story in columns in galleys. He also inserted logos into the spaced ads.

4) Inked impressions of completed ads or stories were made with rollers operated by foot. These impressions were referred to as 'galley proofs' or 'pull-ups'. They were sent for proof-reading and returned to operators for correction.

5) The copy, with corrected 'slugs' (lines) wrapped in it, was then dropped onto the 'correction bulk'. Compositors swapped the corrected slugs for the slugs containing errors. Once corrected, the type would be put onto a different 'bulk'.

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[1]Larger type used in advertisements.

6) Stonehands took this corrected type in galleys over to 'the stone' or bench on which they 'made up the pages' in the formes, working with the type upside down and in reverse image. They arranged the type, blocks and borders for editorial copy in the metal page according to the subs' instructions. Advertising copy was composed according to customers' instructions and the stonehands' discretion. As they placed the type in the forme, they also inserted 'leads' and 'rules' or 'cut-offs' to create vertical and horizontal spacing within and between the columns. This procedure was referred to as 'leading' and 'bumping out'. It was done to separate individual ads and news items for ease of reading, to increase visual appeal and to ensure that the type and blocks fitted tightly when the page was 'locked up' in the chase. The stonehand might lock and unlock the chase several times until he got the 'fit' right.

Stonehands who worked on classified ads arranged material in alphabetical order in columns under the correct classification. New ads were inserted at intervals after they had been 'phoned' in and typeset. Classified ads held over from one edition to the next were retrieved on the appropriate day and also inserted in the correct column.

Completed pages were proofed again for the subs and wheeled over on trolleys to the Hoe where the card-board mould of the page was made. The formes were then wheeled back into position and kept for any changes to be made for the next edition.

7) About 2 p.m. - after the last edition for the day was printed - the formes were 'dissed' or disassembled. Type from editorial material and expired ads was tossed into bins for recycling. Type from advertisements which would be re-run in future editions was stored in the relevant galley. Spacing material was also sorted into column width and type for re-use.

Tradesmen typically worked on the Ludlows and on the stone. Apprentices were usually assigned to scrubbing, pull-ups and correcting. About two-thirds of the hand-compositors worked on the stone at any one time, but could be assigned to other tasks such as bulkhand and correcting - depending on work-load and time pressures. Dissing was done either by tradesmen or apprentices.

The following description of a stonehand at work on the editorial page of The New Zealand Herald illustrates the range of skills needed for the job of making up the page in metal. The stonehand was wearing a navy blue apron with a central pocket from which he periodically took out a space band to aid him in slipping lead between the lines of type. He worked with a ruler, first measuring the space in the forme, then the slugs of type in the galley which were required to fit the space. He worked quickly, his hands moving dextrously, placing type and metal strips and quads[1] together in the columns, and testing the tightness of the fit with rapid movements of the

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[1] In hot metal composition, all non-printing space within a line is filled out with 'em quads' - metal squares the width and height of a given point size.

fingers. As he worked, the stonehand assessed the page for its visual appeal. He placed standard headings mounted on blocks for the 'LETTERS TO THE EDITOR' and 'THE WEATHER'. Then he began to arrange the type for the 'Letters to the Editor', selecting the appropriate galley, and picking up a quantity of type between two fingers and holding the slugs tightly so they could not fall. He worked down the page with the header 'THE NEW ZEALAND HERALD' closest to his body, and hence, with the type (in reverse image) upside down. Blocks had to be made to fit absolutely tightly, and raised on a lead base to a specified height to form the correct impression in the cardboard mat or flong. As he worked, the stonehand explained that if the type was not tight there could be "real problems". Once, for example, when he was pushing the forme over to the stereotypers, one of the wheels of the trolley had gone down a hole in the concrete "tossing the whole lot onto the floor". He was fortunate that time, he said, since he had just re-made the page for the second edition and the stereotypers were able to use the first edition plate which had not been discarded.

(b) Cold-Type Techniques

Chapter 2 described how computer-controlled photosetters automatically set advertising and editorial material in columns according to typesetting commands keyed in by VDT operators. Typeset material is processed on bromide or film paper, which retrained comps stick onto layout

sheets in a technique referred to as 'paste-up'.[1] The work of the compositor on paste-up involves the following stages:

1) The afternoon before the page is due to be printed dummy layouts, showing the position of ads, arrive from the advertising department. These positions are ruled up by the comps on full-size layout sheets.

2) Editorial layouts arrive from the subs the following morning and the comps again rule up their sheets to indicate the position of news items.

3) Onto these layout sheets, comps paste display ads, editorial and classified advertising material, slowly building up the page as the copy comes through. When complete, the page goes to the photo-engraving department where it is photographed and converted into plates for the printing press.

Since the text and artwork in display ads is typeset and composed in a different department,[2] comps need only paste the entire ad onto the page. Editorial and classified advertising copy, however, is composed by the photosetter and typeset on sheets of bromide.[3] These are sorted after processing and brought to the comp making up the relevant page.

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[1] Chapter 2, pp.41-47.

[2] Known at The Star as the 'cold type department' since it was the first department to be associated with cold-type production in the early phase of its development; see Chapter 2, p.49.

[3] Recent extensive modifications to The Star's computer system enable display ads to be treated in a similar way.

Editorial material is treated in the following way: lines on the layout sheets indicate the position of columns and provide a visual guide for the placement of the copy. The comp cuts each story from the bromide sheet with a small scalpel and coats the back of the bromide strip with wax[1] before sticking it in place. The wax allows the copy to be lifted easily and moved, since the position of the story on the layout sheet may have to be changed from time to time. Thin black strips of adhesive tape are stuck on the sheet to create a border round stories, or to divide them in the columns.

The comp measures first the length of column or columns allocated to the story and then the length of the typeset copy, and adjusts it accordingly. For example, if the copy is too short, he cuts between headline and paragraphs or, if necessary, between lines, to bump out the story. Similarly, a story typeset in a single strip, but having to run over four columns, will be measured, divided into four and cut and spaced appropriately. The job is, as one comp described it, "like putting together a jigsaw", and hence the comp must work carefully, lining up the copy so that it is square.

Classified advertising material is treated similarly but with small variations. Comps making up editorial pages work at individual frames; those on 'classified ad' pages work at long benches in a team of two or three. One comp works from the back of the classified advertising

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[1]From a small unit dispensing hot wax on rollers.

pages, the other from the front. Another assists in cutting up the sheets into columns, waxing them and sticking them onto metal sheets for later transferral to the layout sheets. At the same time, logos are matched-up with the appropriate spaced ad[1] and stuck into place. Waxed multiple copies of the headings of various classifications are kept in an indexed book for daily use. The task then is to paste up the columns of ads under the correct classification, cutting the bromide strips at an appropriate point when each column is filled. In carrying out the work - whether with advertising or editorial material - the comp needs to be accurate and "have an eye for visual appeal".

Comparisons of the stonehand's job[2] and paste-up, based on observations and the men's descriptions of their former work, were good grounds for concluding that the hand-compositor's job had been objectively deskilled. Although paste-up involves accurately placing copy in position, the men now work with clear readable print in the form in which it appears in the paper. The skill of reading type that is upside down in reverse image has disappeared. Admittedly, layouts are not always straight-forward and copy rarely fits in in exactly the form in which it is phototypeset. Nevertheless, bumping out the lines or paragraphs requires only an ability to cut

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[1] Figure 2(a), p.51.

[2] It is important to note that the stonehand's job was the most skilled work under hot metal. Other aspects of the job were less demanding, and these are discussed in the section which follows.

accurately and place the waxed strips square on the page. Gone are the manual dexterity and judgement required in fitting together innumerable pieces of metal into a tight page.

Nevertheless, paste-up, like hot-metal composing, still demands an eye for graphic design and some skill is required to produce visually attractive layouts. For example, the subs may call for special mottled finishes or borders for headings or stories which cannot be created photographically. In addition, comps exercise greater discretion in pasting up The Weekend Star or in non-standardised commercial jobbing work. However, opportunities for exercising these skills appear to be limited.

The change has also eroded other areas of decision-making and responsibility. The computer-based system sorts ads automatically into alphabetical order in the correct classification, thus eliminating the need for accuracy in manual sorting. In addition, ads run on previous dates and due for re-run are automatically retrieved from computer storage and inserted in the appropriate column on the required day. On balance, since part of the stonehand's former skills have been taken over by the photosetter and part by the VDT operator who keys in a number of photosetting instructions,[1] the job that remains is limited in skill.

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[1]Discussed fully in Chapter 8.

(c) The Deskilling Experience

How had the men experienced this objective deskilling? Des, who had been at The Star for 15 years, was pasting-up a page when I talked with him about the changes. He spoke for all the ex-stonehands when he gestured towards the layout sheet with his scalpel and commented,

> *There's no pride or skill in it any more. It's not a career. [Here, he gave a quiet laugh of derision]. That's nothing to look forward to for the next 20 years. A school kid could do it.*
>
> *Before, you had to use your brain and count points up, [to determine the space available for the type or blocks]. There was a skill associated with the speed needed when you work with newspapers. There was enjoyment. If not that, there was always work to do before you started making up the pages and after. You were busy. Then you had to learn to read type upside down. And you were working to speed.*

A stonehand in his fifties told me that comping "in the old days had been a skilled trade. Anybody could be taught to cut out and paste on." Mike claimed that "you could train a monkey" to do the job. Several comps likened paste-up disparagingly to "putting on wallpaper".

The following conversation occurred in the 'caf' early in 1981. I had gone in for afternoon tea and sat down with the newspaper at a table next to seven or eight comps. A conversation arose spontaneously from a series of questions put to me about the research - what I was studying, and "how long the book [would] end up". As we talked, I asked them how they felt their jobs had changed.

John: Printing used to be the second most skilled trade after glass-blowing.

Graham chipped in: We've been massively deskilled and massively dehumanised.

Q: In what ways?

Graham: You could bring in a person off the street and teach them in a week. The paper wouldn't look as good, but it'd still come out.

Doug [sitting to his left]: You've lost your pride.

A chap to the right of Ian elaborated: Printing [comp ing] was "work you did with your hands. You'd get your hands covered with ink. You were handling the metal" [and he demonstrated with his hands, showing evident pleasure].

Q: [from me to the person on my left who hadn't spoken]. What do you think of the work?

A: Bloody boring.

However, hand-composing had also been boring under hot metal. Two of the worst jobs were dissing and correcting. Reflecting on his previous work, Paul spoke about one job that had to be done on Mondays:

> *Eight comps took about two and a half hours to dis [the pages from Saturday's editions]. This was the most boring work. You felt like a zombie standing there. You nearly fell asleep. The lines were so close together.*

Dennis talked about how, in the past, his work on Saturday mornings involved coming in at 6 a.m. "to make corrections to the stuff set [on the previous evening] by the TTS machines". As indicated earlier, there were always many errors because the machines were old, and often mal-functioned. John guessed at any one time there might be

between 300 and 400 errors in the type to correct.[1] In his words [reiterating the point made in Chapter 4],

> *the job was so boring that you'd get to the bottom of the column and find you still had several lines in your hand, and simply throw them away.*

Dissing and correcting were invariably described as boring. The difference when compared with paste-up was that the compositor's job during hot-metal days was much more varied. As Des suggested above, work on the stone yielded the most satisfaction, but before and after making up the pages there was always work to do which, while not always enjoyable, "kept you busy".[2] By contrast, the reduction in work-load since the changeover meant a lot more standing around. This added to the men's boredom with the work of paste-up. During a conversation in March 1981, Jim, for example, said that he felt the need to <u>do</u> something after work, "run, the garden, <u>something</u>". As he explained:

> *It's the inactivity. You feel like you're in a cage. What we'd like to do is finish work and go. But we have to stay until the [VDT] operators have finished. Most of the guys are bored.*

Although he expressed a need for activity after work, later in the conversation Jim admitted that "the laziness was carried on from work to the home" and so he "just sat around". That seemed to be a typical response from the compositors to the changes in their job.[3]

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[1] See Chapter 8, p. 244.

[2] The work included scrubbing, bulk, corrections and pull-up.

[3] And see also the conversation with Geoff quoted on p.195.

For example, in a conversation Ken spoke enthusiastically about a new job he had just been allocated, pasting-up The Weekend Star. This gave him greater overall responsibility and discretion than the normal work of the comp on paste-up and meant a steady flow of work throughout the day. He spoke of the first day on the new job:

> *Time passed very quickly. That day when I went home I didn't go to sleep. Usually it's so boring. I go home and sleep.*
>
> *Q: Did that happen before, when you were working under hot metal?*
>
> *A: No, not before.*

The experience of the change also affected Des' home life. He spoke of how he felt in the mornings when he thought of coming in "to do this all day", then added that since the changeover, his wife and children ask "why are you so moody?"[1]

Observations and responses such as these suggested that the changeover to cold-type production techniques deskilled significant aspects of hot-metal composing and reduced the range of tasks associated with it.[2] As was the case with the photo-engravers, the fieldwork illustrated the utility of Braverman's concept of deskilling in analysing technological transformation. However, and

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[1] See the previous footnote.

[2] Like the photo-engravers, the comps' responses to the objective changes in the content of their jobs also reflect boredom with the reduced work-load - a situation particular to the fieldwork carried out during the end of 1980 and the first half of 1981. The decision to retrain the comps on the VDTs - discussed in Chapter 5, Section 3(b) - meant that as groups of men started typing training, and subsequently commenced courses on computer-based typesetting, the number of men working on paste-up declined accordingly and there was more work for those who remained.

significantly, the experience of the compositors underlined the limitations of a framework of analysis which omits the role of labour resistance and labour market segmentation in such a transformation. Although computerised phototypesetting and composition techniques objectively deskilled the hand-compositor's job, the men at The Star avoided the full implications of the deskilling because - as I have demonstrated in Chapter 5 - they were given the opportunity of retraining on the visual display terminals (VDTs)[1] in preference to keyboard operators who were non-journeymen members of their union, the TTS operators. After retraining on the terminals, the compositors and the VDT operators (who had also retrained on paste-up) were rostered to work interchangeably.

The evidence reviewed in Chapter 5 and in the present section demonstrates that "the distinction between (de)skilled jobs and (de)skilled workers" (Lee, 1981:59) has important implications for a theory of the labour process. As Lee argues (1981:59) "the notion of skill may, of course, refer either to the requirements of the job or to the capabilities of the worker". Braverman "writes as if the 'degradation of labour' and the 'deskilling of workers' were interchangeable terms, whereas in fact they are not" (ibid.). As I have shown, the extent to which workers are affected by job changes is not

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[1] See Chapter 8 for an analysis of the content of this work.

pre-determined, but depends importantly upon the nature of resistance to any deskilling facilitated by the changes - resistance which is the outcome of a process of struggle between contending groups of employers and workers. As was the case with the photo-engravers, the empirical evidence suggests that the application of new production techniques at The Star had consequences for the compositors' skills which were far from straightforward.[1]

Moreover - as I have argued in Chapter 3 - although Braverman does acknowledge that the application of the deskilling principle "brings into being new crafts and skills and technical specialties" (1974:172), the argument he advances emphasises deskilling over all other outcomes of technological transformation. As Beechey (1979:14-15) contends:

> *It is an oversimplification to analyse the changes in the labour process solely as a tendency towards deskilling and the degradation of labour ... the history of capitalist production must be seen as the history of the destruction and the recomposition of skills.*

In the section which follows I examine the upgrading in skills, or 'reskilling', that occurred among ex-comps and stonehands who retrained as computer personnel; and show that other occupational groups at The Star also experienced some reskilling - an issue which is again

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[1] A finding which is supported by other recent empirical studies of the labour process; see for example, Jones (1982).

addressed in analysing the work of the VDT operators (Chapter 8) and the 'tele-ad operators' (Chapter 10).

3. Reskilling

In the transition to computer-based production, The Star's management initially employed only one person with a computer science background for work as a systems analyst/programmer. Even he had some previous experience in newspaper production.[1] However, five jobs were created which required advanced computer skills but drew on the existing printing skills and the in-house knowledge of comps and linotype operators already employed by The Star.[2] One of the new jobs entailed managing the computer room. The other four were system controllers. During intensive training courses and in on-the-job experience, the men who retrained for these jobs acquired a knowledge of computer systems and programming skills relevant to computerised newspaper production. Thus, their knowledge of, and responsibility for, the work process were significantly increased in the changeover. In Braverman's terms, the five ex-comps and linotype operators had been reskilled.

The manager of the computer room - a former comp - explained how he and the four other men had been selected

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[1] The analyst/programmer had been with The Star working first part-time, then full-time, for a period of five years, and hence he had a working knowledge of hot-metal production.

[2] This is consistent with evidence from a 1976 case study (cited by S. Hill, 1981:115-116) which showed that managers in the British toolmaking industry preferred to upgrade their craftsmen into programmers because they considered men who understood the whole process made better programmers than technicians with programming expertise but no craft knowledge.

for the job. The Production Manager called for hot-metal compositors and linotype operators in the composing room, who might be interested in doing the work, to put their names forward. Twenty-eight applications were received.[1] These people were given a day's course, after which they took a small test, and the number was whittled down to ten. Finally, after a short audio-visual course and further testing, five were selected for training.

The analyst/programmer and computer room manager went to Brisbane in April 1979 to observe the operation of the newly-installed cold type system at The Courier Mail. July marked the start of the installation and testing of the new equipment at The Star. Then training began and the five men underwent courses run by the suppliers of the computer equipment and software.[2] By Christmas the men were each responsible for putting out one of The Star's four community newspapers in cold type. In the following May, the daily newspaper changed over fully to the new production system.

Part of the retraining involved the five men working with the computer analyst/programmer modifying and developing the basic software supplied with the equipment. For example, the men devised special formats which

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[1] Out of an estimated 70 comps and operators at The Star during 1979.

[2] Digital Equipment Corporation (New Zealand) Limited, commonly referred to by the men as DEC.

enabled the VDT operators to typeset editorial and advertising copy in a form which was consistent with The Star's traditional style of typesetting under hot metal. These formats were developed from a 'string' of 'mark-up'[1] - a bunch of computer commands detailing the exact location, column measure, font size and type of a particular piece of text. Formats are shorthand versions of mark-up. Mark-up is "carried along inside the job all the time". That is, the coded typesetting instructions are keyed in with the text of the ads or editorial material and are interpreted and acted upon by the relevant computer program.[2] Thus - in developing these formats - the men had to use newly-acquired computer knowledge together with their trade skills.

Another aspect of their training has involved assisting the analyst/programmer in developing 'applications packages' for a variety of small and larger tasks in the overall production system. For example, a 'housekeeping' program has been devised which carries out, automatically, routine tasks associated with the daily operation of the system. During 1981, the men from the computer room developed and tested the Classified Management System (CMS) which enables telephoned advertisements to be entered directly into

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[1] Discussed in Chapter 2, Section 3, p.43.

[2] Since one letter or symbol omitted or typed incorrectly will change the sense of the instruction, formats - which are shorter than mark-up strings - permit the operators to set copy accurately working under speed.

the computer via a VDT, manipulated in a variety of ways on screen, and phototypeset without further manual handling.[1]

In addition to the reskilling directly associated with developing and controlling the systems for computerised production, the men have also carried out a teaching role in assisting printers who have recently undergone retraining and require regular help with problems which they encounter in their day-to-day work on the VDTs. More formally, one of the system controllers was given the job of teaching the printers, in groups of six, over periods spanning several months. In addition, he ran the in-house training courses for the clerical workers from the classified advertising department who retrained as 'tele-ad operators'.[2] Several of the men from the computer room also wrote the 63-page User Manual for the CMS system.

In summary, the jobs of these former compositors and linotype operators were substantially upgraded. However, the extent of reskilling has varied over time since there were a number of major technological developments over the two-year period following the original changeover as different parts of the production system were brought 'on-line' and others phased out.[3] The

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[1] This system is discussed in detail in Chapters 9 and 10.

[2] See Chapters 9 and 10.

[3] Including the Dunedin edition, the new Classified Management System, TTS operation, integration into the system of the cold type department, and commercial tradesetting.

development side of the job is more creative, whereas operating the system on a day-to-day basis is more routine. As with the photo-engravers, however, the manager and system controllers enjoy the problem-solving or 'diagnostics' aspect of the day-to-day operation of the system, and the necessity to work under the pressure of deadlines heightens the challenge. Referring to the diagnostic abilities of those people who work with computers, Fry and Szewcow (1981:12) suggest that these skills are acquired "via a subtle inter-leaving of conceptual understanding, intuition and experience" and point out that "it is often a satisfying activity to exercise diagnostic skill, especially when successful". Observations and conversations with the former comps and operators, illustrated below, were clear evidence of their satisfaction with their new jobs.

John, the computer room manager, used to be a comp in the days of hot metal. He had been in the job 15 years when I first spoke to him late in 1980. When The Star's management were planning to implement the new computerised system of typesetting, John was offered the chance of retraining for the job of systems controller. He was always interested in computers, so he decided to apply although he "didn't really have any idea of what was involved". He went on, "I was keen to use this chance to get away from printing and into computers. I'd been with it for so long."

During a conversation we had ten months later, John volunteered, "I don't work...It's not work", he reiterated, emphasizing that his job was so enjoyable that he did not regard it as work. He went on to explain:

> *I'm glad I live out of Christchurch. Otherwise I'd be forever in here playing with the system. Like the weekend. Sunday was a dreary day. You couldn't get outside. If we just lived close I'd have come in. When my wife was in hospital [in Christchurch] I used to stay in at work, go and see her, then I'd still have some time to kill. I wouldn't want to watch TV so I'd come back in here until about 10 [p.m.].*

He compared the diagnostics involved in his job with "people playing about with cars", and added,

> *I wouldn't have been here [at The Star] now if I didn't have this job. I was ready to leave when I first heard about the changes, so I waited around, and it's all just fallen into place.*
>
> *I was going to leave and perhaps go into a bread round with a friend. [He laughed]. I'd have driven a truck, I'd have done anything for a change. I needed a change. I'd been doing the same job for so long.*
>
> *Q: Have you actually studied electronics or computers before?*
>
> *A: No, I used to be interested in programmes about these things on the TV but never done any reading or anything. It just came out of the blue.*

Conversation with one of the sub-editors towards the end of 1981 turned to the men who worked in the computer room. The sub reflected on their experience in undergoing retraining. He commented that one of the system controllers had "done the same as his father - just followed in his trade. He never knew he had the

intellectual ability" to master the job with computers. This was an opportunity that otherwise would never have been available to him. He went on:

> *There must be a whole number of New Zealanders [in current employment] who have the intellectual ability but don't know it. You don't need to go to 'Varsity' [to discover it].*

He spoke of the Production Manager who had a trade background, but who in mid-career spent months and months immersed in computer manuals, sitting in on the training courses when he was able to get away from the everyday demands of production. As the sub-editor put it, "At his stage of life, to suddenly realise you can do those things must have been a real thrill". The analyst/programmer also spoke of the opportunity afforded the men in the computer room by the changeover to cold-type production. He pointed out that two of them had become so interested in computer work that they were teaching themselves programming.

During the retraining programme in which I participated,[1] Steve, the system controller running the course,[2] was talking in the lunch-break about his dissatisfaction with that morning's session. His commitment to teaching - clearly apparent over the months of fieldwork - is illustrated in the following comments:

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[1] See details of methodology, Appendix B.

[2] He also had primary responsibility for retraining more than 40 operators and compositors on the VDTs.

> *My mind wasn't on the teaching today. I like to teach in a way that people can understand. When I was at school I learnt best from teachers I liked, in a climate where people feel relaxed enough to ask questions...*

The conversation turned to Steve's selection to run the training programme. It was apparent that he had been keen to do the job and he explained why:

> *Just the thought of doing the same thing for the next 30 years!! I left school at 15. This [working on the linos] was all the work I ever knew. I'd had 13 years when the system came in. I was in a rut.*

The upgrading of the job content and skills required for the work of computer room personnel was most marked. However, observations and conversations with the men in rotary and 'cold type', and with the sub-editors[1] suggested that the work carried out by each group was upgraded in some way as a consequence of the changeover. In addition, other occupational groups found specific aspects of their changed jobs an improvement. The following examples illustrate the significance of the various changes for the different workers involved.

Late in 1981 (about 18 months after the change) I was speaking with Norm, one of the 12 'colour men'[2] who work in the rotary department. I asked him how he found the changeover to di-litho.[3]

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[1] Fieldwork in these departments was not as extensive nor as systematic as it was in the other departments studied.

[2] The 'colour man' is in charge of one of the units of the printing press. While the press is running, he makes adjustments to settings on the unit which control the flow of ink and the flow of water. These are affected by such factors as the speed of the machine, atmospheric conditions and the quality of the paper. "You've got to be constantly checking" the settings while the press is rolling.

[3] Chapter 2, p.49.

> *Every job gets to be routine after a while so you find it a challenge to try something new. The work's more challenging [because] there are more technical details to worry about [when the press is running]. Also, with more maintenance to do, there's less down-time now, less waiting around.*

Norm said he had seen much greater involvement of everyone in the department. The job "involves team-work" because "from the top down everyone's learned at the same time" and this has meant that each person can contribute when they try to sort out problems that arise in maintenance or operation. He gave an example - if a plate flies off the press, the problem could be caused by up to six different factors and, systematically, you all try to work out which one, or combination, it is. Another time you might "get water flowing into the ink and it'd go white [the image on the paper]". In Norm's view, working as a team was "the biggest thing to come out of it [the change] for me. I get a lot of satisfaction with the team thing." He continued,

> *Before, I was looking [in the paper] every week for new jobs. Some days I used to hate to come to work. Not now [pause] oh, only a couple of days maybe.*

Bill, a keyboard operator from the cold type department, spoke with me two months after he had been retrained to work on-line with the computer. He said that the retraining had made the work "much more interesting".

> *There's a lot more <u>thinking</u>, having to remember things. It was a challenge to master it. Until you actually get things [problems coming up] on the screen you don't really understand.*

Three months after the changeover to cold-type production, the 'cables sub' overheard me speaking with the Chief Sub and turned round to comment on the changes in the sub-editor's job. His views were entirely positive.

> *We've been freed from much of the clerical work - say one hour a day we've saved. That's meant that we can spend a lot more time on sub-editing.*

He explained that the subs are no longer involved with the cutting and pasting which was required under hot-metal production. As explained earlier, with the old technology each story had to be 'broken up' so that the type could be set on different machines. For example, a front page story received from the Press Association might require a 72 point heading, an 18 point introduction, and the text, in 8 point, to be broken up into two or three 'pars' per slip of copy paper. There would also be an extra slip or two for cross-heads, and perhaps another for the words 'see page...' where a story was continued on a subsequent page. Thus the text of the original teletype message might end up glued onto seven or eight different slips of paper, each bearing individual instructions for its typesetting.

Like Norm, Brian (one of the proof-readers) and Sam (an ex-comp) enjoyed "getting the old brain ticking over" and "using the old brain a lot more" after the move into cold-type production - although Brian added cynically, "until the rot set in" (when the job became routine again) after about two to three months. He reflected that,

> *maybe it was like suddenly being changed from screwing the tops on round bottles to screwing them on square bottles.*

He noted that proof-reading a continuous stream of classified ads was "a real drag" because of the computer codes in each. Paradoxically, however, there was greater satisfaction in the new job "because you're expected to be one hundred per cent accurate. You've got something to aim for." As he explained:

> *You felt as if you were wasting your time under the hot metal system, reading for errors. There were a lot more mistakes. There'd be dropped galleys and the ads would be a mess, but you'd mark corrections, and they'd never be made.*[1]

One of the older men who decided not to retrain on the VDTs had been given the job working in the dark room where film from the photosetter was processed into bromides. I asked him how he found the changes. His reply was graphic: "To tell you the truth, I'm glad to get off my arse after 40 odd years at the lino."

4. Conclusion

The material examined in the last section of the chapter illustrates the way in which changes in technology resulted in job reskilling for several occupational groups; at the same time, the changes involved the challenge of mastering new problems which made the jobs more interesting.

As was the case with deskilling, the process of reskilling was more complex than that suggested by the

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[1]Compositors found the job "so boring" that sometimes they would simply throw the corrected lines away; see p.211.

Braverman framework. Three aspects of the process need to be distinguished. Firstly, innovation in the workplace is a novelty which many workers welcome, since "all work gets to be routine after a while". For this reason, 'change itself' is an important dimension of technological change, particularly when the rate of technical development transforms production techniques every few years, as appears to be occurring in the newspaper industry.[1] Moreover, workers can experience the "novelty of the new" without significant reskilling occurring. A second aspect of the process of reskilling is the challenge of mastering something which "gets the old brain ticking over" and "involves a lot more thinking". As the present and subsequent chapters show, significant 'learning skills' were required, particularly during the initial period of retraining using the new computer-based production techniques. Finally, the actual upgrading of the job is a function of these two other aspects of the process of reskilling, but it is useful to distinguish them from the third aspect - the long-term reskilling of the job relative to the one it replaces.

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[1] As I have indicated (see p.218, Footnote 3), significant production changes occurred over the research period, and this situation is likely to continue. For example, at the May 1983 conference, the Executive Director of the NPA, D.J. Patten, referred to four developments most likely to be contemplated by New Zealand newspaper publishers "in the next few years". These were 1) direct editorial input; 2) sub-editing on terminals; 3) full-page composition on terminals (pagination); and 4) 'remote entry', which enables reporters at a sports meeting, for example, to 'feed' sports copy into the central computer using a portable 'suitcase' terminal.

The evidence shows that, objectively, the jobs of computer room manager and system controller were significantly upgraded relative to the jobs of compositor and linotype operator. The origins of this reskilling lie not so much in technological exigencies but in the social process which I analysed in Chapter 5. As this analysis showed, the decision to retrain printers to carry out the new work with the computer stemmed, in part, from the Award clause which gave preference for retraining on the new equipment to printing tradesmen[1] - although, as the evidence shows, this was a decision also favoured by management.[2]

The number of printing tradesmen actually involved in this reskilling (5) as a proportion of the number of linotype operators and compositors then employed at The Star (about 70) was small, and this is consistent with the claim that new technology creates relatively few skilled jobs. However, it is premature to make inferences about overall deskilling effects until I have examined the effects of cold-type production on all occupational groups at The Star. As indicated in Chapter 5, the changeover to hot-metal production affected two major areas of production - plate-making, and typesetting and composition. In this chapter I have examined the effects

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[1] See Chapter 5, Section 2; and Clause 25 of the Printing Union Award (Appendix C).

[2] See p.215.

of the changes on the jobs of the photo-engravers and the compositors. The following chapter analyses the job of VDT operator by examining both the objective and the subjective dimensions of deskilling.

CHAPTER 8

SOCIAL CONSTRUCTION OF SKILL

1. Introduction

This chapter shows the inadequacy of a theoretical approach which analyses technological change solely in terms of objectively-defined skill changes. As I have argued in Chapter 3, Braverman's deskilling thesis embodies a number of different aspects of skill. He fails to clarify which of these he is referring to and assumes they are coterminous. In this chapter I provide empirical illustration of the complex relationship between objective and subjective aspects of skill, and show how this relationship influences not only the subjective experience of new technology in the workplace, but also the political strategies adopted over its introduction - an issue explored more fully in the chapters which follow.

As the previous chapter has shown, the deskilling thesis could be applied to analyse the changes in the jobs of the comps and photo-engravers. However, it was an inadequate framework for understanding the effects of the new technology on the linotype operators. As I show in Section 2 of the present chapter, despite the loss of significant hot-metal skills, in important respects the men appeared to have been objectively reskilled. They had acquired a new set of computer-based "mental" skills, and their work on the visual display terminals (VDTs) was less fragmented, not more.

The way the men described the changes, and their responses to them however, were ambiguous (Section 3). Some operators experienced the change as deskilling and focused on the loss of hot-metal skills in describing their former work. Others regarded the change as a significant upgrading in skills and spoke of the intellectual effort required to learn to set type using a computer terminal. In Sections 4 and 5 I show that this ambiguity can be explained because the linotype operators' experience of the changes was determined not only by objective changes in job content, but also by subjective definitions of skill which they applied to their job and to those of the TTS operators. An important component in these definitions were ideas about skill based on gender.

The following assessment of objective changes in the work process is based on observations of both hot-metal and cold-type techniques, and on an analysis of the men's descriptions of their jobs before and after the change.[1] The technical detail is necessary in order to appreciate the significance of the changes for the analysis of skill which follows in later sections of the chapter.

2. Objective Changes

(a) Linotype Operation

In Chapter 2[2] I described how a linotype operator operated a keyboard of 90 keys, causing a stream of matrices

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[1] See Appendix B.

[2] Section 2(b), pp.26-32.

('mats') to form in a line of a specified column width. The line had to be 'tight', or justified to the exact length, otherwise lead spurted up between the mats when the metal cast was being formed, and an uneven mould resulted. Unlike typed material, the space between type-set words is variable. These variable spaces were created with spacebands which pushed the words apart until the line was justified. When a line could not be justified without leaving too much, or too little space between the words, it required a hyphenation or 'word break' at the end. Word-breaks and spacing had to conform to acceptable typographical standards in general, and those set by the particular newspaper.[1] In setting type, therefore, the 'lino-operator'[2] needed to attend not only to the accuracy of the text he was setting, but also to the physical spacing of the words in the line and to the positioning of the hyphen when it was required. Moreover, tabulated material such as spaced ads and sports results required particular attention since the words or figures in them had to be lined up correctly in columns of equal spacing to achieve a visually-pleasing effect.

In addition to these typographical skills, the lino-operator had to learn to operate the machine itself. Key-board skills were required to assemble the mats and space-bands accurately in the line at speed. Irregular or 'pi' characters were selected from the 'pi tray' and inserted

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[1] As one of the men put it, a linotype operator needed an "eye" for the physical appearance of the line he was setting, and a "good command of the 'King's English'".

[2] The men typically spoke of 'lino-operators' or 'lino-ops'.

into the line of matrices manually. Once the line was complete the operator depressed a lever to move it into the mould and to bring hot metal into contact with the mats. Other operations carried out by the lino operator over the course of the day included:

1) Changing the magazine containing the mats by pressing a lever and turning a handle until the new magazine engaged in position. This was done when mats of a different point-size were required.

2) Changing moulds to correspond to the different point-sizes. A handle was pulled out to engage the mould wheel at the correct mould.

3) Changing the trimming knives: Each time the point-size was changed, the knives were adjusted to the correct position to trim the slugs after they came through the mould.

4) Changing the measure which determines the column width of the slug. To do this, the operator wound a gauge activating a bar to give the appropriate column width.

5) Changing the metal ingots (weighing about 10 kgs.) which were suspended on the chain above the pot of molten metal. This was done about four times a day depending on the speed of typing.

In addition to these tasks, the lino operator would have to clear the 'disser' (disassembly bar) if the mats stuck and failed to fall back into their slots as they travelled along the bar. This involved the operator leaving his seat at the keyboard, climbing onto the step at the

back of the machine, and reaching along the bar at head height to release the mat.

(b) VDT Operation

As discussed in Chapter 2,[1] the new method of typesetting employs the computer to input, store and manipulate text, and control photosetters. A VDT operator 'interacts' with the computer through a keyboard. He uses computer commands to select the point-size, and column width; to position the text in the column by creating vertical and horizontal spacing ('leading'[2]); and to create special features such as italic script, bold type, headings in reverse image and borders for stories or ads. This information is keyed in when the operator inputs copy into the terminal. The codes and text are displayed immediately on screen and any errors can be corrected before the information is sent for processing. The central processing unit 'reads' and acts upon the coded instructions. At the same time, the text is automatically justified by a computer program which hyphenates words when necessary and spaces them equally in the lines. The copy is then sent by the computer to a photosetter, where it is set and composed as justified type with the selected point-size, column width, tabulation and spacing.

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[1] Section 3(a) and (b), pp.41-45.

[2] Hot-metal terms such as this were retained and used to describe similar typographical techniques under the cold-type method of typesetting and composition.

As this description shows, linotype operators have lost responsibility for justifying and hyphenating the lines of type - important typographical skills - but their work is less fragmented under the new system. For example, on a typical day under hot metal, two operators worked on intros; one operator was on cross-heads and other smaller single column headings; another was on 'impact' setting the bolder type used in the 'classified ad' columns. Another would spend all day on type for double column ads. Other operators set 'body type'[1] in eight, six or five point. Under computer-based typesetting, one VDT operator combines the work of all these operators when he sets the headings, intros and text of ads and editorial copy. In the words of an ex-linotype operator, "in the past a typesetter might be just a 'cog'; now those on the VDTs have several jobs collapsed into one". As a consequence "you need to think much more. Now you handle all the space ad."

At the same time, the VDT operator carries out some of the work previously done by the hot-metal compositor since, under cold type, the operator keys in instructions which place or compose the different parts of the story or ad in the column, and determine the amount and position of horizontal spacing and the location of borders and other special features.

As the description of VDT operation shows, the work required concentration, understanding and a good memory for

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[1]Type for the main body of the ad, or story.

the different computer operations and coding. In the words of one operator, it was "more a mental skill than a physical one". In addition, since the operators did not get a visual representation on the screen of the different point sizes and spacing within and between lines,[1] they had to visualise the composition of the ad which they were setting. The FOC, J. Williams, explained it this way,

> *Before [with hot metal] you could see what you were doing. Now much more is in the imagination to be able to conceive of the finished ad and key in the right commands. It's easy to overlook commands and the job comes out quite differently from what you imagined it would.*

In summary, with the change in production methods the ex-linotype operators lost significant hot-metal skills - skills associated with hyphenating and justifying the text, with operating the linotype keyboard itself and with the machine's physical operation.[2] On the other hand they gained computer keyboard skills - touch-typing on a 'qwerty' keyboard and knowledge of the function and operation of control keys. At the same time, the ex-linotype operators acquired knowledge of the overall process of computerised typesetting, and in particular, learnt a complex sequence of computer codes and their use in typesetting and composing work that was typographically acceptable. As part of this process they had to acquire the skill of 'visualisation'.

I turn now to discuss the men's subjective response to this objective deskilling and upgrading in skills.

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[1] What appeared on screen was merely the text and coding in one size of 'type'.

[2] In addition, linotype operators made minor adjustments to the machine, but major maintenance work and mechanical repairs were carried out by the lino-mechanics.

3. Subjective Responses to the Changes

The following two conversations are representative of two different patterns of response which emerged from discussions with the ex-linotype operators at The Star and at other newspapers. Each of the operators quoted below had been retrained for a similar period of time when I spoke with them. Both perform the same job on the VDTs. The first, Tom, expresses considerable dissatisfaction with his new job. He describes the objective deskilling that has occurred, and refers, in negative terms, to the sedentary nature of the work. The second operator, Garth, speaks of the new job in very positive terms and experiences the changes as a significant upgrading in skills. My reference to the loss of hyphenation and justification[1] skills prompts him to elaborate on the actual upgrading that has occurred. During the conversation he makes no reference to the loss of the mechanical skills which troubles Tom.

Tom was sitting at a computer terminal as we talked about the changeover to cold type, and his expression was doleful. He compared the terminals with linotype machines in these words:

> *I'm getting too long in the tooth to change*[2] ... *[PAUSE] It's cleaner. It's strange having clean finger-nails, but ... [here he shrugged].*

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[1] Typically referred to as 'H and J'.

[2] There was a slight tendency for younger men in their 20's, 30's and early 40's to speak more favourably about the changes than the men in their late 40's and 50's. However, this was an insufficient explanation for the variance in response. At The Star, and in visits to other newspapers, it was apparent that older people sometimes responded enthusiastically to the changes while young men in their early 20's sometimes expressed resistance to the new technology.

> *As long as you have a good memory you can do it [the work on the terminal]. You could get a really good typist and in 12 months train her. Not that I'd tell management that! Many of the skills [which linotype operators used to have] are now in the machine.*
>
> *I had 30-odd years as a linotype operator. Now it's much more a mental skill than a physical skill. There's no movement. You could sit at the desk all day except to go for copy.*[1] *Before if things went wrong with the linotype machines you had to make adjustments.*
>
> *When you think, about $2 million has been spent on new equipment. What have you got for it? Not one extra paper sold. What's the point of it? The reader can't see any difference from what it was 12 months ago.*

Garth was very matter-of-fact when I approached him at his terminal and asked if I could speak with him. He worked and talked intermittently, showing no discomfort that I was watching him. It was clear from the start that he had no desire to go back to hot metal, and he referred to his former work as a "horrible, dirty, smelly job". But the changes in the physical environment were not the only reason. As he explained,

> *Under hot metal all the [spaced] ads would come out the same. There's much more variety in the ads now.*
>
> *You can make it how you want it. You can tell more or less when you see the ads [in the newspaper] who's set them. Everyone has their own style.*

Working on spaced ads and other material that needed to be tabulated gave him most opportunity to use his former trade skills and the computer skills he had recently acquired.

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[1] That is, to get a supply of copy from the central distribution point, 'the box'.

But Garth also found setting editorial copy more satisfying under the new system.

> *What I like is I get the whole story [more often][1]. Before I would just get bits. It used to annoy me. I'd get part of a story and say 'I must look that up when I get home' and then you'd never be able to find it.*
>
> *People would ask [before] 'what did you do today?' and you couldn't show them anything [because the work was fragmented, and not readily identifiable].*

Setting the whole story however meant that "you could see what you had done. "You can look through the paper and see there is a bit of me in it." I asked whether - since they had lost the 'H and J' skills (hyphenation and justification) - the job change had represented a loss of skills for the operators. Garth was quick to reply:

> *No, I actually think there's more [skill] to it: The fact that you're doing the whole story [or ad] ... that gives you more of a feeling of fulfilment, satisfaction.*

Towards the end of the lengthy conversation I commented:

> *Q: From what you've said, you're pretty comfortable with the system? You seem to understand it very well. [PAUSE]*
>
> *A: I don't know. I know enough to keep my head above water, but there's still lot's to learn. For example, I still don't know anything about rule work [involved in 'tradesetting'].*[2]

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[1] Close to a deadline, stories will still be split into 'takes' of only three or four paragraphs. See also Chapter 7, p.200.

[2] As explained in the previous chapter, The Star had recently expanded its typesetting into tradesetting or commercial printing. Objectively, this was the most skilled work since it was the least standardised, and drew on the full range of computing and typographical skills. At that stage (November 1981) only the system controllers had had enough experience with the work to have gained any mastery.

Despite the fact that Garth had been in the second group of operators to retrain (in the latter part of 1979), and it was now November, 1981, he went on to say

> *I learn something new each day. I may not know it at the time, but when I think about it afterwards, I realise I have. There are different ways of doing the same thing, and you might feel yours is the best way, until you discover another way of doing it.*
>
> *Q: So there are still challenges in the job?*
>
> *A: Yes.*

These two conversations illustrate two markedly different patterns in a range of responses to the change-over. To understand these differences it is necessary to analyse how subjective definitions of work as 'skilled' or 'deskilled' emerge out of everyday experiences in the workplace, and how these, in turn, can have an important influence on the subjective experience of changes in the content of work following technological transformation.

4. The Social Construction of Definitions of Work

In the analysis that follows, I show how perceptions about the respective jobs of linotype and TTS operator influenced the response of printing tradesmen[1] to the job of VDT operator - perceptions in which gender was a salient factor. The discussion begins by recalling how the introduction of TTS machines into New Zealand newspapers in 1954 changed the work of typesetting, and how the linotype operators responded to this change.

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[1] As discussed previously, former comps as well as linotype operators retrained on the terminals. Although a similar argument could be made for the comps' perceptions of VDT operation, to simplify the analysis I focus primarily on the latter occupational group.

(a) Introduction of TTS

Previously I have shown how TTS machines produced a punched paper tape which activated linecasting machines - similar in design to linotypes - and produced type automatically.[1] When automatic linecasting was first introduced in 1954, the TTS keyboard operator hyphenated and justified lines of copy using a measure on the TTS machine as a guide. With the early development of computers in the 1960s the punched tape was put through a 'paper tape reader' and a computer program carried out the 'H and J' operation. Output from the computer was another paper tape, this time hyphenated and justified.

During the study many older printing tradesmen spoke with bitterness of the decline in typesetting standards which accompanied this deskilling. For example, men at Wellington Newspapers spoke of the lapses in style that had occurred following the change. These included "funny breaks [word-breaks] like 'be-droom'" and numerous hyphens appearing on consecutive lines. As the men explained, there should be "no more than three in a row", and that was "barely acceptable".

As I have shown in a previous chapter,[2] when the TTS machines were first introduced, typists were employed because "tradesmen wouldn't belittle themselves or condescend" to operate the TTS machines. "It wasn't work for skilled tradesmen". Several times during the fieldwork,

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[1] See Chapter 2, p.32.

[2] Chapter 5, p.135.

printers and union representatives referred to the output from the TTS machines as "idiot tape", symbolising the deskilling entailed in the machine's operation.

Since type was cast automatically, the TTS operation replaced the manual skills required to set lines of type on the linos. The extent of objective deskilling of specifically typographical skills is difficult to assess on the basis of the available evidence.[1] Certainly, by the 1960s, when a computer program produced a punched tape which hyphenated and justified the text, typesetting had been significantly deskilled. More importantly however, the evidence suggests that, from the outset, the TTS operation was perceived as deskilling on the basis of both objective and subjective factors. In addition to the loss of 'H and J' skills, other trade skills learned in an apprenticeship on the linos were disappearing. Operating a TTS machine did not require mechanical aptitude. At the same time, since the machines had 'qwerty' keyboards similar to those on a typewriter, they were associated with 'women's work'[2] and regarded as inappropriate for skilled

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[1]The original TTS machines still required manual hyphenation and justification, although the manner of performing these tasks was transformed. However I was unable to see the earlier versions of these machines and to assess the degree of objective deskilling that had occurred.

[2]See the comment by a New Zealand Herald printer, "When the TTS machines first came in, the guys wouldn't touch them - not machines for girls" (Chapter 5, p.136).

tradesmen.[1]

Perceptions of TTS work as 'women's work' and 'the work of a non-tradesman' were reinforced over time. Since the men refused to do the work, women became associated with the machine's operation. During the Arbitration Court hearings in November 1981, the term "powder bar" was used to refer to Wellington Newspapers' TTS room, illustrating the extent of sex-stereotyping of the occupation. The term persists at The New Zealand Herald despite the fact that males now operate the TTS machines there.[2]

Moreover, the job was formally defined as semi-skilled during the collective bargaining process. Women were admitted into the Printing Union as non-journeymen members under Clause 17:9[3] of the Award, and paid at lower rates than the tradesmen.

(b) Reinforcement of perceptions at The Star

Evidence from the fieldwork at The Star suggests how both objective and subjective factors in day-to-day experiences with the TTS machines[4] reinforced these percep-

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[1]This point is clearly illustrated in the following conversation with Auckland printers (January 20, 1982). One of the men had been speaking of the skills needed to be a linotype operator, and he contrasted this with the work TTS operators had to do. He went on: "When TTS came in 1954, the men wouldn't handle it." Q: "Why?" A: "It was a trade and TTS wasn't..." Another printer interjected: "No, it's more the social aspect." [His meaning was quite clear.] Q: "Because it was a typewriter keyboard?" First printer: "Yes, because at [a northern provincial newspaper] the keyboard was a lino, [the TTS machine had been fitted with a linotype keyboard] and the men never objected."

[2]Visit January 20, 1982.

[3]This refers to the number in the latest Award - 1981.

[4]The TTS machines were used at The Star to produce the bulk of the 'straight setting' for the text of advertising and editorial copy.

tions of the work both as 'women's work' and as 'semi-skilled'. Although the TTS room[1] was part of the composing room and an integral part of the typesetting operation, it was physically separated from the working area of the comps and linotype operators. Given the hot, noisy and 'dirty' working environment associated with the linotype and other hot-metal machines, this segregation was seen by management and the women as desirable, but it further emphasized the distinctions between the women's work and the men's.[2]

Some of the men, recalling the early days of TTS (before the production of computer-justified type), spoke of the difficulty the women had "in getting the lines tight". As indicated earlier, unless lines were correctly justified, lead spurted out when they were cast on the linecasting machines. Since tradesmen monitored the line-casters, they were aware when the women failed to justify the lines correctly, confirming the men's view that the women lacked the necessary trade skills.[3] Furthermore, the women worked 'blind' since the sole output of their typing was punched tape. Although TTS operators learned to read the pre-coded pattern of holes in the tape as a guide to accuracy, without a typed version of the copy they could

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[1]The TTS room was a partitioned area of the composing room.

[2]In a recent study, Game and Pringle (1983:28-29) found that the sexual division of labour in the Australian whitegoods industry was based on "a series of polarities which are broadly equated with masculinity and femininity". The most obvious distinction was between skilled and unskilled work. The other main distinctions which they identified were: heavy/light, dangerous/less dangerous, dirty/clean, interesting/boring, and mobile/immobile.

[3]An Auckland printer saw it this way: "The women didn't care. They knew we'd correct them" (visit January 20, 1982).

more easily miss typing errors.[1] Linotype operators had to make corrections to the copy which the women produced after it had been set by the linecasters so they were again aware of how many errors the women made. In addition, the linecasting machines grew increasingly unreliable over time and the error-rate from the TTS - in the years immediately before the changeover - was high.[2] Although in this case the 'fault' lay with the linecasters, it helped reinforce the idea that the TTS operation deskilled the trade of typesetting.

The TTS machines at The Star were operated by both part-time and full-time workers. The part-timers were typically married women. Some of the part-timers were married to men in other departments of The Star who were known to the printers. Objectively, and as perceived by the printers, the work-commitment of many of the married women was secondary to their role as wives and mothers. They fitted their work hours around this primary role. Full-timers left when they became pregnant or when their husbands moved to other centres in New Zealand. Full-time workers often returned as part-time workers after their children reached school-age. Typically their involvement in chapel activities and concerns was minimal for reasons

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[1] However, it is important to note that the linotype operators had as a guide to accuracy only the 1-2 cm high letters lightly engraved on one edge of the brass mats which together formed 'the words' of the text.

[2] The Production Manager commented on one occasion that "because the linecasters were old - designed in the nineteenth century - they were required to go well beyond their technical capabilities and many errors occurred".

that related partly to their domestic commitments but also, significantly, to the attitudes of the men towards 'women's work' and the TTS operators' non-journeymen status[1] (discussed below). The men in the comp room referred to a number of instances of chapel-management conflict, in which "the TTS girls" saw their interests coinciding with those of management rather than with those of the Printers' Chapel. Similarly the chapel was perceived by the women as furthering the interests, almost exclusively, of its 'male tradesmen' membership.[2]

The work of the TTS operator was almost entirely sedentary. The women walked to a central distribution area to pick up their takes, and, after typing the copy and creating a strip of punched tape, returned to the same area to run the paper tape through a paper tape reader. However, they spent the greatest proportion of their time copy typing. The women were selected for the job if they were fast, accurate typists. They were required to pass an accuracy test at a speed of at least 60 words per minute. Those working in the TTS room during the study typed at speeds up to 80 words per minute. The TTS operators were perceived as "getting their heads down and working flat out". The nature of the machine's operation, and the work-flow in their department, reinforced the sedentary nature of their

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[1] These attitudes can be understood in the context of the development of the Printing Union as a male craft union with well-entrenched traditions and practices which the chapel system embodied. For a discussion of patriarchy in the historical development of the British printing industry, see Cockburn, 1983:14-35.

[2] There were exceptions as I have shown in Chapter 5, p.138.

jobs. This is suggested in the following comment by a part-time TTS operator:

> *We've always been a department shut away on its own - because we were always busy all the time. We couldn't wander round the building like those who have slack times [down-time].*

Linotype operation, in contrast, involved much more physical movement as the discussion in Section 2 shows, and the organisation of work in the comp room allowed the men greater freedom to move about the floor. Producing lines of type from hot metal entailed a series of physical operations using manual skills. In addition, as a former 'lino-op' put it, "if the machine stopped, you had to use your nut to work out what was wrong". This involved making minor mechanical adjustments in a process of trial and error, before calling in a lino-mechanic if necessary. Walking to and from the printer's box to pick up takes, and over to the bulk to drop completed galleys of type also provided mobility in the job. In addition (as Plate 2 shows[1]), linotypes were large cumbersome machines, and their size and positioning on the comp room floor afforded operators some protection from direct visual supervision. As one operator explained graphically, "if you had a hang-over you could always hide behind the machine" avoiding detection for significant periods of time.

Moreover, for both the linotype and TTS operators, the term 'tradesman' entailed that the work on the linotypes was 'skilled'. Linotype operators were required to

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[1]Chapter 2, p.30.

undertake an apprenticeship involving training on the job and attendance at technical schools for block courses and examinations. As apprentices, the men were on low wages. Over time they acquired a range of typographical skills, knowledge and experience. They also acquired, subjectively, a view of themselves as skilled workers, based not only on these objective competencies, but also on the strongly hierarchical nature of the apprenticeship system,[1] as the following conversation with two lino-ops suggests:

> *Steve: When we were apprentices we had to do the 'shitty' jobs - and we were on awful pay - sweeping floors, serving tea, getting urns...*
>
> *Bob chipped in: Going out to get people's lunches, remembering what everyone wanted for lunch, bringing back the right orders and the right change [otherwise there'd be trouble].*

In the opinion of a personnel officer at Wilson and Horton's, "when you come up through the [printing] trade you do your first 8,000 hours [the length of the apprenticeship] then you start learning the trade". When an apprentice had completed the necessary training and exams and had 'served his time', he took on the status, pay and work of a tradesman.

The TTS operators were not tradesmen, but typists. Women who work as typists typically learn their skills at school over a number of years or in attendance at secretarial college. They serve no formal apprenticeship, and are not socially defined as 'tradesmen'.[2] When the TTS operators

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[1] See Cockburn (1983:15-19) for a discussion of the traditions of the apprenticeship system in the printing industry - a system which has its origins in medieval guilds.

[2] Game & Pringle (1983:29): "Women's skills, especially if acquired informally, go unacknowledged."

commenced work at The Star they were taught the particular requirements of the job by the senior operator in the room.

Kathryn, one of the part-time TTS operators, resented the implication[1] that their work was less skilled than the men's because the men had done a trade. "I say we've done our apprenticeship at school." Sandra, a full-timer married to a former linotype operator, did not agree. She spoke of the degree of difficulty involved in completing a four-year apprenticeship. "I've seen some of my husband's exams. It's a lot harder than we realize."

Whether the work of typists who operate TTS machines at speed is comparable in skill to linotype operation is not at issue here. What is significant is the complex relationship between the objective basis upon which judgements of skill were formed, and the social definitions applied to the jobs of linotype and TTS operator. That the former but not the latter entailed serving an apprenticeship which formally defined the job as skilled, entered into subjective perceptions of the respective jobs.

The tradesman/non-tradesman dichotomy at The Star was not exclusively along gender lines. Men who have not served an apprenticeship and are non-journeymen members of the Printing Union work, for example, as 'general hands'. What was significant, however, was that all the tradesmen operators or comps in the composing room were men.[2]

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[1] An implication which became explicit in the conversations of the men as the issue of women being retrained on the terminals came to a head periodically over the course of the study.

[2] This situation began changing in the middle of 1982 as two female non-journeymen members of the union took up adult apprenticeships, and as two female apprentices were taken on at The Star at the start of 1983.

The few women who had served apprenticeships with the Printing Union worked in the cold type department on paste-up.[1] The only female apprentice operating a keyboard during the period of the fieldwork worked on a TTS machine, a decision which appeared to be influenced by her own and the VDT operators' preferences to keep the terminal room exclusively male.

The complex relationship between trade status, gender and skill was demonstrated again and again in the fieldwork. Cross-validation was obtained from observations and discussions with different occupational groups and representatives of the unions and management at The Star and The Press (in Christchurch), and in Wellington and Auckland.[2]

For example, in January 1982 a member of the personnel section of Wilson and Horton's (the company which produces The New Zealand Herald) explained the printers' resistance to women becoming involved with computerised typesetting, in these words:

> *When the guys say it's the work of a tradesman they're interested only in the last three letters [of that word].*

In discussing the 'non-journeyman' clause in the Printer's Award, a management official at The Star commented to me on one occasion,

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[1] The cold type department was located on the floor below until it moved into the comp room in mid-1982.

[2] The relationship seems to be cross-cultural, as Cockburn's study of the British newspaper industry shows (1983). For example, in an analysis of the work of the hot-metal compositor, Cockburn comments: "Much of (the) men's self-respect depends on the idea of being able to do work that men alone are fit to do" (p.180). (See especially pp.151-190).

> *There are two distinct categories of members in the Printers' Union: tradesmen and non-tradesmen. [Referring to tradesmen] you go into the industry, serve an apprenticeship, and come out at the other end as a 'canonised saint'.*
>
> *Non-tradesmen have not served an apprenticeship (although you don't have to sit exams - that's something). If you've done one [an apprenticeship] you can carry out the complete range of typographical skills. [PAUSE]. They're [non-tradesmen] very much second class citizens.*

In November 1981, while The Star management and chapel awaited the outcome of the Arbitration Court hearing,[1] a chapel official and ex-linotype operator suggested to me that the resentment the men in the comp room were expressing towards the women[2] in the 'front office' "was because they're only typists not tradesmen". This perception of the differences between the occupations was shared by some of the TTS operators, as Sandra's comment above suggests. In November 1981, Sally, a full-timer, suggested that the TTS department's future was uncertain because the women were seen as a threat to the men's jobs. She added that she could understand their attitude because

> *they've done a trade. They've had to suffer the low wages, studying, going to Auckland to the 'Tech' [technical college], putting up with things [as an apprentice]. They resent girls coming in 'off the street' into their jobs.*

'Off the street' was the term frequently used to describe someone who had not done a trade, and a recurring theme in conversations with men in the composing room was expressed

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[1] Discussed in the following chapter.

[2] These women were at that stage clerical workers. They are now members of the Printing Union, following an Arbitration Court ruling, December, 1981.

in this way: "why should someone coming in off the street be able to get a job which we've had to do an apprenticeship for?" The Printing Union's newspaper, Imprint, echoed the same theme in its May 1982 edition:

> *The skills of keyboarding and cold composition [paste-up] are increasingly the domain of the semi-skilled ... unless apprentices have the ability to progress in art and design skills, they will find themselves competing for jobs at the end of their apprenticeship with lower paid, semi-skilled people. Surely a poor return for low wages, block courses and correspondence study over four years [emphasis added].*

In summary, I have shown how linotype and TTS operators reached common understandings about the meaning of skill based on objective job content and practice, the content and experience of apprenticeship-training, and the relationship between these and gender. Thus, their perceptions of skill were underpinned by objective competencies and socially-constructed definitions of skill. I turn now to examine how these perceptions influenced the way the men in the composing room responded to their new job on the computer terminals.

5. Subjective Response to VDT Operation

Earlier I discussed the different patterns observed in the tradesmen's response to the objective deskilling and upgrading of skills that occurred with the move into cold-type production, and I illustrated the range of responses by referring to the conversations with Tom and Garth. The ambiguity can be understood in the context of the men's perceptions about VDT operation relative to their experience with the TTS operation:

1) as had occurred with TTS, VDT operation represented the loss of the key typographical skills of hyphenation and justification;

2) similarly, the manual skills and experience with machinery which were needed to operate a lino were also lost,[1]

3) the VDT operation was work done on a qwerty keyboard. To retrain, the lino-operator had to acquire typing skills. Typing, like TTS, was 'women's work';

4) as was the case with the TTS machines, VDT operation was also a more sedentary occupation and could be more closely supervised;

5) moreover, the work was performed in an office environment rather than in the hot-metal 'male world' of the composing room.

However, as objective descriptions of the work show (Section 2), when The Star changed to computerised typesetting and photocomposition, the work was reskilled in important ways. The extent to which both the objective deskilling and upgrading in skills was recognised by an operator appeared to depend significantly on gender-related factors: on how closely he identified VDT work with that done by typists on TTS machines and other office machines associated with 'women's work', and on his perceptions of his former work on the linotypes as 'men's work'.

(a) VDT Operation as 'Women's Work'

Like the TTS machines and general purpose typewriter, the computer terminal used at The Star has a qwerty keyboard,[2] in addition to a bank of special function keys.

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[1]Indeed, the TTS operation only partially affected hot-metal typesetting, leaving significant areas of the work to be done in the traditional manner. Cold-type composition replaced all hot-metal typesetting.

[2]In this context see especially the conversation with Auckland printers, footnote 1, p. 242.

The keyboarding skills required to operate the terminal are those of a typist. Two other related factors appear to have contributed to perceptions of VDT operation as 'women's work'. Firstly, although the Printer's Chapel was successful in insisting that the new computer terminals could be handled and operated only by tradesmen,[1] the men retrained first on new electric typewriters which management purchased especially for the purpose.[2] This practice of learning typing on typewriters and not terminals[3] has continued throughout the training of both operators and comps. Secondly, the men were taught by a succession of typing teachers from the Christchurch Polytechnic who were all women. Evidence is inferential, but comments like the following, from an operator in his twenties, suggest that learning a 'female' skill from a woman was experienced negatively by some of the male tradesmen:

> *Typing's a 'disaster' ... I have a habit of letting my right hand rest on the edge of the typewriter. She [the teacher] comes along and lifts my wrist up [he demonstrated with his other hand]. It's a bit demoralising for a big grown-up man like me! [and he grinned wryly].*

The view that typing is "essentially a female skill" - as a person in senior management put it - was shared by management, and men and women in the Printers' Chapel alike.

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[1] The TTS operators were not "allowed near them", I was told.

[2] A decision made in part because of chapel insistence.

[3] The practical implications of training on typewriters and not computer terminals is not at issue. What is important is that the new computer equipment was handled exclusively by the tradesmen for a period of over two years, which had implications for the men's perceptions of their new job (an issue explored below). Having to learn first on typewriters, however, would have contributed to perceptions of the VDT operation as 'women's work'.

In April 1981, Max, a comp working on paste-up, had just started learning to type in the afternoons before going onto a terminal. As he worked that morning on the classified ads, he talked to me of the changes in production techniques since he began his apprenticeship 13 years before:

> *When I got taken on here I didn't think I'd end up with a scalpel and pushing paper. [He reflected for a moment, then grinned ruefully] Well - a joker typing?!*

The link was frequently made between typing as a female skill, 'women's work' and VDT operation. For example, in an early interview at The Star in December 1980, a management official told me of an older ex-lino operator who, since the change, "had talked of his fears about being a glorified typist". The following exchange took place in 'the caf' when I was sitting with female and male members of the Printers' Chapel, from the cold type department. Craig, a comp undergoing typing training, joined us. He had just come from a typing lesson - held in a room off the caf - and as he sat down he burst out:

> *I hate typing. My fingers won't seem to find the right keys. My left middle finger tries to hit the 'i' but it's on the other side. [There was general laughter.]*

Someone asked him whether any of the comps had decided not to retrain on the computer terminals.

> *Craig:* *Three or four of them won't - the older guys.*
>
> *Anne:* *[a TTS keyboard operator from the cold type department]: I don't know how they [the terminal operators] can stick it, sitting on their behinds all day.*
>
> *Philip:* *[cold type department - working on paste-up]: I couldn't do it.*

Anne: *Guys would hate sitting hour after hour.*

Judy: *[cold type department - working on paste-up]: Well you do it.*

Anne: *But it's more women's work.*

As this conversation suggests and the analysis of the TTS experience showed, one of the features which characterises 'women's work' is its sedentary nature. Earlier I showed that, in their work on the terminals, the men composed and set complex tabulated material. To do this, they had to understand and recall the correct typesetting codes and use these to create typographically pleasing work from a conception they had in their minds of the finished product. Thus, the operators did not spend their time in uninterrupted copy typing,[1] although 'straight' setting of editorial copy and some run-on ads (which required minimal coding) was part of their work.[2] However, as the previous conversation suggests, the men were sometimes perceived as doing the work of a copy typist since they sat, "hour after hour", at a typewriter-like keyboard.

Allied to this, the sedentary nature of the work was perceived as providing opportunities for close supervision usually associated with 'women's work', as the following comments illustrate. I had just asked Des, a comp in his 40s, about his response to the changes. He was bitter that

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[1]The extent to which accurate copy typing at speed is viewed as less skilled than traditional forms of typesetting is, of course, itself subject to ideological assumptions based on gender.

[2]The content of the men's work varied over the research period. The significance of software changes which were implemented for tradesetting and for the CMS system, is discussed in the following chapter.

his job had been deskilled, and had no desire to retrain on the terminals:

> *Being in the terminal room is like going to jail, staring into a screen all day... No freedom at all. You have to put up your hand to leave the room.*[1]

He referred derisively to the operators "being in the terminal room like a bunch of girls".[2]

The extent of the freedom which the men experienced in their former jobs compared with that associated with 'women's work' is graphically illustrated in the following statement. Chris, a VDT operator in his 20s, was sitting at a terminal as we spoke. Gesturing at the keyboard he commented:

> *The job's more for girls. They're more conscientious. They work all day. [Here, he's referring to the TTS operators]. There's no way you'll get guys to work like that. They [the women] can do 80 words per minute. They're worth three of us on straight setting. They're more worried about what the boss'll say. Whereas, we guys... [and he shrugged and grinned].*

(b) Linotype Operation as 'Men's Work'

As a consequence of the changes in production techniques and work organisation following computerisation, the work environment had become (in the words of a former linotype operator) "more of an office and less of a factory". Chapter 6 showed that linos and linecasters were cumbersome

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[1] Frequent observations of the terminal room did not entirely accord with this description. Its significance, however, is that this was how some of the men perceived the work relative to that done by the printers under hot metal.

[2] In this context see also the response of other comps to the idea of retraining; Chapter 5, pp.132-133.

"It was a mechanical thing," he explained. Rod said he "used to enjoy it when you got break-downs with the linos". Compared with the terminals "you had moving parts".

The following exchange is particularly revealing about the way some of the men felt towards their former work. Clive, one of the former linotype operators, was working at a terminal when he overheard me asking the operator behind him for specific technical details. Despite my urging that - as it was 11 a.m. - we should not simply leave the terminal room, he insisted on taking me to an old linotype located in a room nearby.[1] Here he demonstrated manually how the mats would fall down the slots in the magazine into the setting stick, depressed the lever which would have brought the mats into contact with the molten lead, and turned the wheel to wind the magazine up or down. As he showed me the various parts of the machine, and demonstrated or described how they operated, his attitude and the way he handled the lino graphically illustrated his feelings towards the machine.

Based on this observation and the comments of other operators over the previous months, I said to Clive that the men seemed to feel that, before, their work was more physical (and I stressed the word). His response is revealing. He nodded in firm agreement and then said:

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[1] A 'museum' used by The Star to illustrate to tour parties the old and the new technologies.

"It was a manly thing. Somehow manly. You think of typing as a woman's job." Working on the linos involved "physically handling" the machinery [and here he demonstrated with his hands.] "It was a fabulous machine, beautiful when polished up." He told me that, as a hobby, he still maintained and sometimes operated a lino in a small printery near his home.

> *That's what I miss. I don't think I'll ever get used to it [operating a VDT] ... [Here, he reflected for a moment] I hope I do one day.*

Men are socialised to feel 'at home' with machinery, to enjoy work and leisure activities which involve them using their hands.[1] The VDTs do not have mechanical 'working parts' like the linos, nor do they need adjustment by the operators. As one operator told me, "now if anything goes wrong you just have to phone 'technical services'".[2]

6. Maintaining Collective Control - VDT Operation as 'Men's Work'

Unlike work on the TTS machines, however, total identification of the VDT operator's job with 'women's work' was avoided during the majority of the research period.

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[1] See for example, Walum (1977:50) who notes that "Boys are to be boys. And that means they manipulate their environment. Their toys are designed to encourage this approach to life itself, to develop the necessary manipulative skills..." Similarly, Ritchie and Ritchie (1978:135) write that, compared with girls, "Boys ... more often play with construction toys, dig in the dirt, help father and build huts".

[2] The name of the department at The Star which carries out maintenance on the equipment.

The Star Chapel[1] successfully:

1) insisted on only tradesmen doing the job. (Thus, no TTS operators were retrained, and the terminal room remained wholly 'male'.)

2) blocked attempts to begin retraining clerical workers from the 'front office' to work as 'tele-ad operators' under the CMS system[2] until the women became members of the Printing Union.[3] (Given the protracted dispute between the respective unions involved, this gave most of the men about two years to acquire typing skills and experience with the VDTs before women, who were already qualified typists, began to acquire experience in typesetting using computer terminals.)

3) blocked the objective deskilling inherent in the CMS system by preventing the wholesale adoption of a system of 'formatting' ads which would have programmed many of the men's typesetting skills into the computer.

The struggle over the deskilling (both objectively-defined and subjectively-perceived) inherent in the CMS system is analysed in the following chapter. Here, it is important to understand the significance - for subjective perceptions of the VDT operator's job - of preventing TTS operators being retrained and working on the terminals alongside men.

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[1] Within the context of events that occurred nationally: see Chapters 5 and 9.

[2] Classified Management System.

[3] As a relational approach would suggest, the issue is more complex than that suggested here and in point 3) below. This is discussed fully in the following chapter.

In other New Zealand newspaper offices women were more closely associated with the VDTs than at The Star during the major part of the research period. It was only with the leadup to the changeover to the CMS system in March 1982 that women began to train and work on the new computer terminals, but even then they did not work in the same room. The importance of this is suggested in the following comment by one of the comps at The Star, who in November 1981 had begun retraining on the terminals:

> *I did let myself think at the start that typing was for girls. But we're in here with the men [indicating the room around him]. It'd be a bit different if I was in an office of all girls.*

In contrast, the TTS operators were retrained on the terminals at The Press alongside the lino-operators. In this context, a comment volunteered by a female employee in the composing room at The Press is revealing: "Some of them [the men] have taken redundancy and left. They feel silly, sitting down typing with the women."

During a visit to Wellington Newspapers Ltd., Bill, a compositor, was talking to me about his interest in race horses. Before the changeover to cold type, he said, one of his friends - with similar interests - could swap information about the day's races as he walked past to collect the next lot of takes (of copy). Now this operator has retrained, Bill explained, they had to wait until morning or afternoon tea because "he sits near the girls",[1] and he

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[1] In a separate room to one side of the comp room.

volunteered, as an aside, "this was a mistake". Although he did not elaborate, his meaning was quite clear.

A key factor in the reluctance of some male printers to have the TTS women in with them is that they occupy two entirely different social worlds, and the lack of ease which one group feels working with the other is reflected in their attitudes towards each other.[1] This is particularly the case since the printers have been, formerly, a cohesive occupational community. The traditional world of the printer was a 'male' world constructed out of experiences related to the machinery, equipment and working environment of the comp room[2] and to the chapel structure.

7. Linotype Operator - A Unique Occupation

The subjective experience of deskilling was not entirely linked to gender, however. The loss of the hot-metal skills of the lino-operator entailed losing a unique trade which the hot-metal machinery and equipment symbolised.

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[1] For example, a TTS operator at The Star spoke of the terminal room as "the snake pit" because of her dislike of the language and behaviour she heard and saw there. Similarly, a printing tradesman in the cold type department volunteered that he now took his afternoon tea at a different table from women in the department because he "disliked the talk about knitting etc.", and "he did not want to be rude" reading the newspaper in front of the women.

[2] The men in the composing room were a very ebullient group, who indulged in a lot of horseplay and swapping of mutual insults. Nicknames were frequently used: including, for example, Phrogg, Tadpole ("little brother of Phrogg"), Horse, Hori, Dognuts, (Dog for short), Snake and Hanging Belly. Typically, on any day of fieldwork, I would hear outbursts of song and shouts across the comp room as insults were flung about. Conversation on the job included discussion about horse-racing, fence paint, catching and smoking eels, and information about a supply of "cheap whitebait at the pub".

Unlike linotypes, VDTs are all-purpose machines. Depending on the particular set of instructions programmed into the computer,[1] an operator can perform a multitude of operations requiring varying types of skill.[2] As Paul, the computer analyst/programmer at The Star put it,

> *most people think a computer is like a car with strictly definable functions, but a computer is much more complex and flexible.*

This flexibility has meant (as Chapter 1 showed) that computer-based technologies are spreading through a wide range of occupations and industries. Therefore, unlike linos, VDTs are not unique to the printing trade. Although the actual skills employed in any particular application of the technology may vary widely,[3] visually the equipment is virtually identical. In Paul's view, compared with work on the lino,

> *the job is much more common. Everyman and his dog has a VDU[4] now. They don't feel like a printing tradesman [any longer]. At least they don't look like one [and he made reference to the aprons the men used to wear and compared this with their current clothing]. They're less identifiable as a printing tradesman.*

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[1] With which the terminal interacts.

[2] As Chapter 1 suggested, a defining characteristic of computer systems is their programmable, or variable nature.

[3] Depending upon the way the software has been written - an issue taken up in the next chapter.

[4] Visual Display Unit. The term VDU can be used interchangeably with VDT, but at The Star, the terminals were usually referred to as VDTs. In the context of the present discussion, it should be noted that, in the Award clause relating to 'Computer Input' (Clause 35), the term 'VDU' rather than 'VDT' is used when referring to equipment used by workers who are not printing tradesmen (see Appendix C).

> *Linotype machines and stones*[1] *are unique. They're specialised. You can't use a lino for anything except to set type, whereas a VDU can be used by anyone (wordprocessors, data processing, etc.).*

The loss of identity as a printing tradesman is made more acute for the men in the composing room, Paul suggested, because

> *there've been whispers [among the men] that in the States there's no such thing as a printing tradesman any longer, whispers that journalists will be doing their job, and whispers about the front office [the women who were to be retrained as 'tele-ad operators']. The trade is going. All those skills that you've spent five years learning are just by-passed.*

Therefore, despite the objective reskilling of aspects of the VDT operator's job, some of the men experienced the replacement of hot metal machinery and equipment by a computerised production system as deskilling since this represented the loss of a set of specific and unique skills.

8. Summary

The fieldwork showed that the ambiguity in the men's descriptions of their new jobs and the way they experienced the changes in skill, was best explained within an historical analysis of the development of the labour process which takes account of both objective and subjective factors.

For some of the men, work on the VDTs was closely identified with TTS work - significantly, work performed

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[1] The term used to refer to the bench on which the stonehands made up the pages in metal.

by non-journeymen. As was the case with the TTS operation, computer-based typesetting objectively deskilled aspects of the printing trade. It was also seen as 'women's work' because it involved typing, was sedentary, and resembled 'office work' and because, unlike linotype operation, work on the terminals did not have a physical component, and did not involve mechanical equipment - both characteristics of 'men's work'.

However, unlike TTS work, VDT operation at The Star during the main research period was identified with printing tradesmen as a consequence of the struggle for control over the technology. The TTS operators were not retrained to use the VDTs, and the terminal room retained its male identity - a factor crucial in the men's subjective perceptions of their new job. At the same time, the job was in some significant respects objectively upgraded.

Thus, this chapter provides an empirical illustration of the complex process by which skill is socially constructed on the basis of both objective and subjective factors, and it affords an explanation for some of the markedly different responses of the men to technological change. Although the picture is complex, the fieldwork suggested that the men more likely to experience subjective deskilling were those who, like Tom, tended to associate VDT operation with 'women's work' as they had come to understand it - as Tom saw it,"you could get a really good typist and in 12 months train her". In describing their subjective experience of the changeover as deskilling, these men referred typically to the objective deskilling that had

occurred - the hyphenation and justification skills that had been lost, and the loss of manual and mechanical skills.

Those men who did not tend to attach as much salience to factors based on gender tended to describe their jobs as involving an increase in skills, and to refer to the objective reskilling that had occurred - the lack of fragmentation in the job, the need for concentration and memory, and their ability to conceptualise or visualise the work before setting it in type. In the conversation referred to earlier, Garth spoke of "being hassled" by people about typing, but he complained that these people did not realise that the VDT operators had to visualise the work they were setting and had to learn the computer commands and know how to use them. They were not "simply copy typing".

Although the analysis in this chapter has focused on the workplace and on 'everyday' experiences with the TTS, linotype and VDT operation, these experiences mirror the sexual division of labour and the social construction of 'women's work' and 'men's work' in other industries. Typically, 'women's work' is lower paid, more sedentary and more closely supervised than men's,[1] and it is perceived as having low status.

The experience of technological change for the men at The Star was mediated by these perceptions of 'women's work'

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[1] For example, see Phillips and Taylor (1980); Shipley (1982); and Game and Pringle (1983).

and 'men's work' and by their gender-defined role within society and the family.[1] The following chapter shows how gender-based ideological assumptions were influential in the struggle over the introduction of the CMS system at The Star.

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[1] See Cook, 1983:10.

PART FOUR

THE CMS SYSTEM: A CASE STUDY

INTRODUCTION

Part Four is a case study of the introduction of a system of handling advertising copy based on the technique of 'direct-inputting' discussed in Chapter 4. It illustrates the development of Braverman's ideas discussed in earlier chapters, and the necessity for a relational analysis of technological change. At the same time it can stand alone as a case study with a particular history and outcome.

In Part Two I discussed early fieldwork which showed that New Zealand newspaper employers were initially cautious about implementing a system of direct-inputting because the labour-saving potential of the technology promoted unrest within the industry. At The Star the changeover from a limited to a fully computerised system of processing classified advertising occurred during the three-year research period. This allowed me to watch and to document the unfolding of the struggle for control over the technology - explored in Chapter 9 - and the experience of the changeover for the men and women involved (discussed in Chapter 10).

CHAPTER 9

CONFLICT AND ALLIANCE

The present chapter analyses the pattern of conflict and alliance which emerged when collective and individual control was sought over a new computerised method of processing classified advertisements received over the telephone. The resulting struggle over job opportunity, and both objective and subjective aspects of skill, influenced the timing of the introduction of the system at The Star, the way in which jobs were allocated and the nature and level of skill entailed.

1. The Organisation of Work Before and After the Change

In Chapter 2[1] I discussed the major production change (from hot metal to cold type) which occurred at The Star during 1979 and 1980; and showed how linotype operators and compositors were retrained to use computer terminals to set and compose type, and to control the operation of the system. As I also indicated, a second major change occurred early in 1982, when a fully computerised system for processing classified advertising was introduced. This system directly affected the work of 22 telephonist-typists who retrained - as 'tele-ad

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[1] Section 5, pp.53-58.

operators'[1] - to record and typeset telephoned advertisements using a VDT. The new system also significantly changed the work of 14 other clerical workers in the classified advertising department and the work of several other occupational groups at The Star.

As a consequence of these two successive changes, The Star has produced columns of classified advertising by three different methods over the past five years. Until the change to cold-type production in May, 1980, 'classified ad' copy was produced in hot metal. From May, 1980, to March, 1982, typesetting and composition were computerised using a 'CM11 system'. (Figure 4 shows the flow of work under this system.) However, the potential of the system was not fully exploited until March, 1982. At that stage the telephonist-typists began retraining under a Classified Management System known as CMS. With this system of direct-inputting[2] telephoned 'ads' were keyed directly into the data base via visual display terminals (VDTs). The ads were then phototypeset without any further 'keyboarding'.

The three different methods of production can be understood by recalling the distinction between 'hard copy' (typed or written material) and electronic copy (displayed on the screen of a computer terminal).[3]

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[1]There is some disagreement among the women at The Star over the use of this term to describe their new job, but it is used here to distinguish the work from their former job, and because it was the term used in the 'tele-ad dispute' described in this chapter.

[2]See Chapter 2, pp.52-53. See also a description of the technique when it is applied to editorial material, Chapter 5, Section 4.

[3]See Chapter 2, pp.41-45 and p.52.

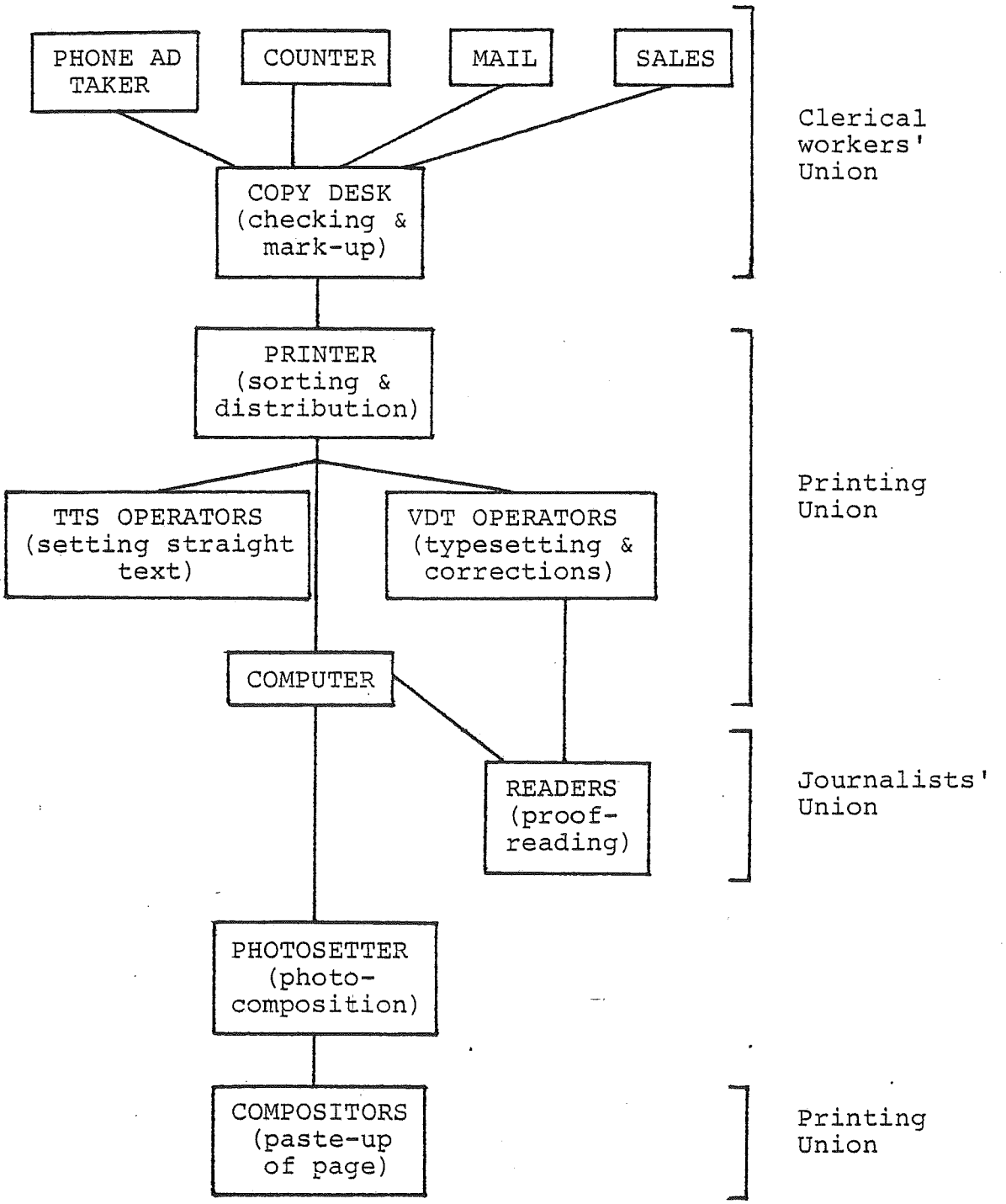

FIGURE 4: PROCESSING CLASSIFIED ADVERTISING UNDER THE CM11 SYSTEM

Under both hot metal and the CM11 system all classified advertising originated as hard copy. This copy came from three main sources: 1) customers 'phoned in' ads to telephonists who used head-sets and typewriters to record the details on a pre-printed form, 2) customers lodged advertisements in written form through the mail or at the front counter of The Star's offices, and 3) sales staff solicited copy from local businesses. This hard copy was routed to the composing room where, under hot metal, linotype or TTS operators set the lines of type for composing in the metal pages; and under the CM11 system, VDT operators entered the copy into the computer using VDTs, and TTS operators produced punched tape which could be 'read' into the computer. In other words, the operators reproduced - in both hot metal and in cold type - the details of the ad from hard copy. Hence, for every ad that appeared in the newspaper, there was a corresponding piece of paper in typed or written form.

With the CMS system, telephonist-typists no longer produced hard copy versions of the ad, since the recording of the contents and its setting into type were carried out during the one operation (see Figure 5). Instead of working with typewriters the women operated VDTs and as they keyed in the wording of the ad and billing details from the customer, they also entered the information into the computer's data base using computer commands.[1]

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[1] A more detailed description follows below.

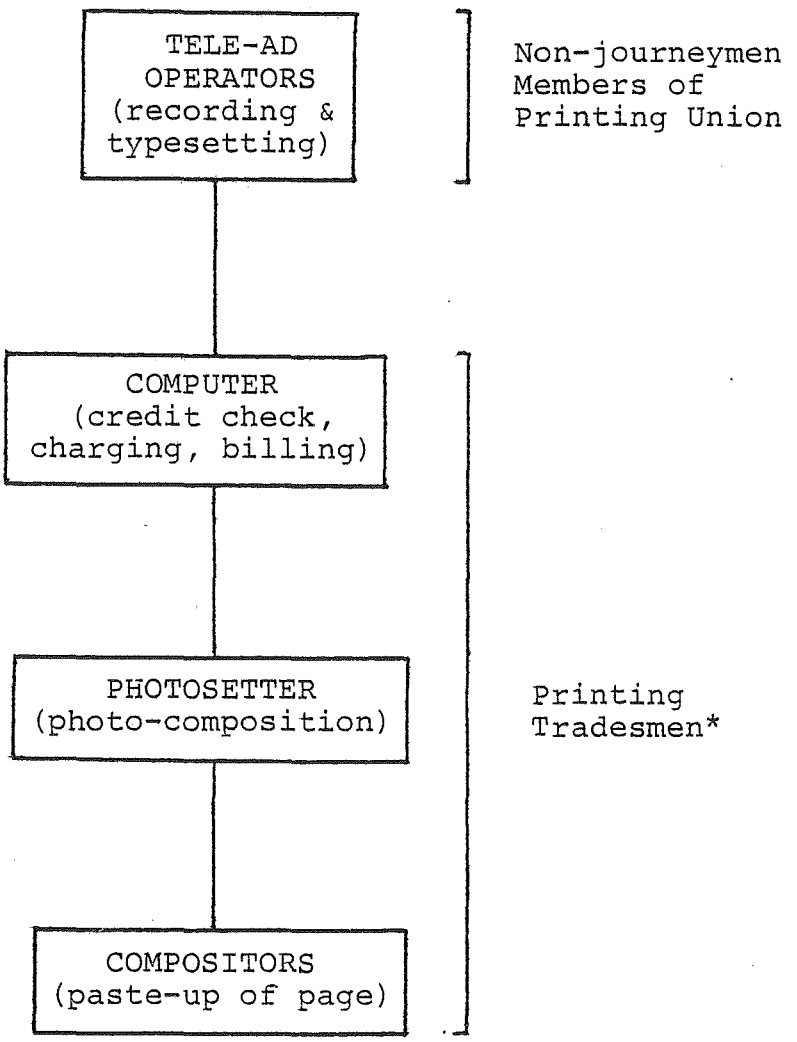

FIGURE 5: DIRECT-INPUTTING OF 'PHONE ADS UNDER THE CMS SYSTEM.
NOTE: NO SECOND KEYBOARDING BY VDT OPERATORS, NO CHECKING AT COPY DESK AND NO SEPARATE PROOF-READING.
(*IN OVERALL CHARGE OF THE SYSTEM.)

Once the ads were entered, they could be manipulated in a number of ways.[1] On the appropriate 'run date'[2] the ads would be recalled from computer storage by a system controller and photoset in alphabetical order in columns of the correct classification. Since the telephoned advertisement was in electronic form during this entire process there was no corresponding piece of hard copy. This is the system of typesetting known as direct-inputting. Direct-inputting therefore refers to the process by which the initial keystrokes of the retrained telephonist-typist[3] are 'captured in print' (or phototypeset) without further keyboarding by printers in the composing room.

2. Conflict and Alliance Within the Newspaper Industry

It is important to recall that although the CMS system was introduced in March 1982, it had been technically feasible to implement the direct-inputting of 'phoned ad copy two years earlier.[4] As was the case with the other technological changes discussed in Chapter 5, the delay in introducing the system was the outcome of a process of

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[1] They could be changed, repeated or cancelled and credit checks could be made. See below.

[2] The day the ad is due to appear in the paper.

[3] Or journalist.

[4] See Chapter 4.

struggle over competing interests arising from the tensions among formal and informal groups inside The Star, and in the New Zealand newspaper industry generally. (Figure 6 illustrates, schematically, the relations of conflict and alliance among the key groups.) Job structures which emerged were the outcome of interaction among the groups involved. This chapter focuses particularly on the structure of the jobs of the telephonist-typists and VDT operators.

(a) Conflict and Compromise between the NPA and the Printing Union

As I showed in Chapter 4, New Zealand newspaper employers faced a number of problems in the mid-seventies which hastened their adoption of computerised typesetting technologies. Eliminating double keyboarding of 'phoned ads was expected to reduce labour requirements since VDT and TTS operators no longer needed to typeset the ads from hard copy. In turn, reduced wage costs would keep advertising charges down, and the single handling of ads would reduce opportunities for error.[1] Both these factors could be expected to enhance the appeal of newspaper advertising relative to other media.

However, direct-inputting of 'phoned ads ran counter to the interests of the Printing Union since, as overseas

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[1] After CMS had been fully operating for seven months (February, 1983), the Assistant Manager at the time estimated that the error rate for classified advertisements had been reduced by 30 per cent. That a substantial reduction in errors had occurred was independently verified by tele-ad operators.

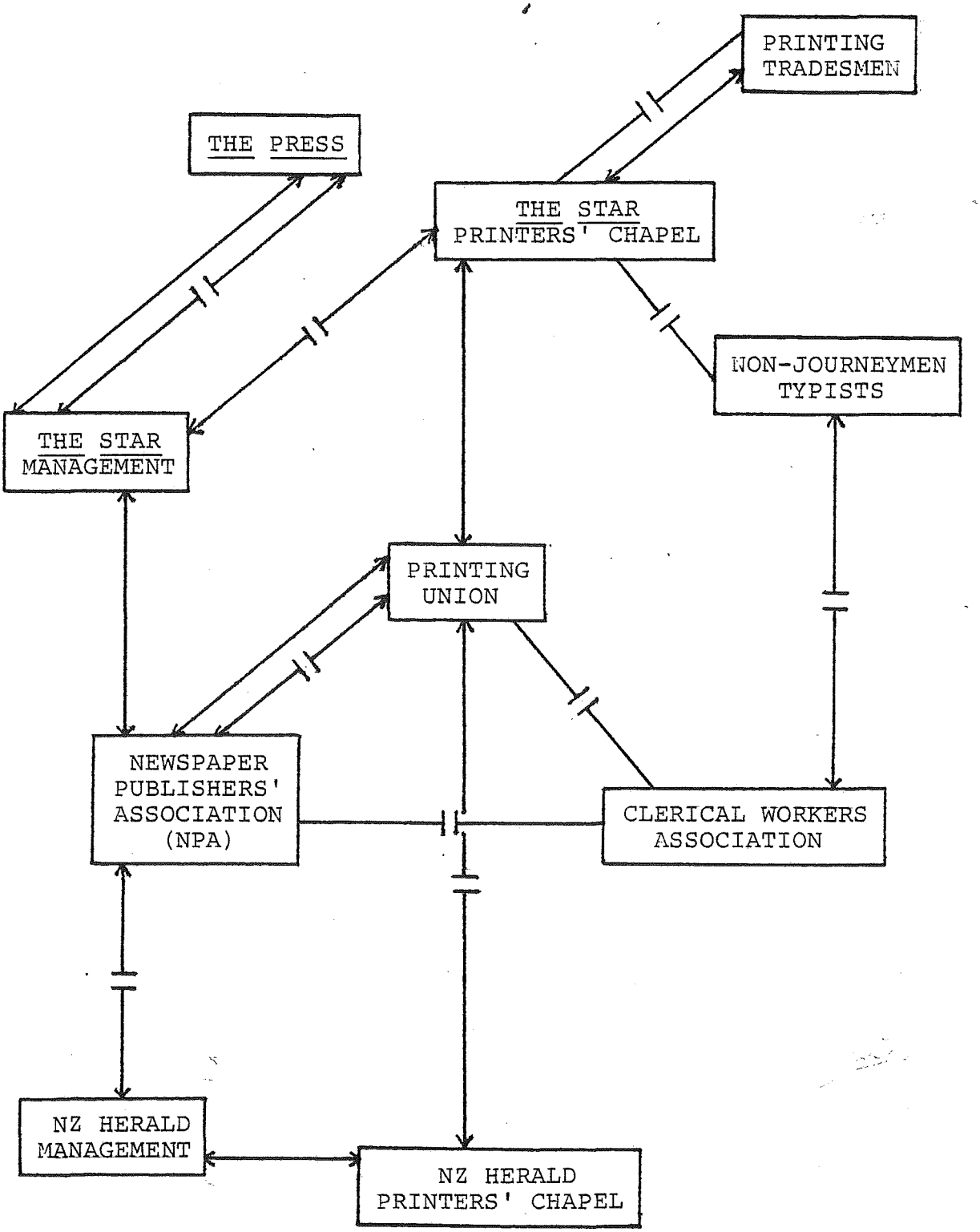

FIGURE 6: CONFLICT (⟷) AND ALLIANCE (⟷) AMONG KEY GROUPS OVER DIRECT-INPUTTING OF 'PHONE ADVERTISEMENTS.

experience had shown, the new technology reduced employment opportunities for printing tradesmen.[1] As a consequence, overseas union membership declined and the traditional control of the printers over typesetting was eroded.

New Zealand printers were well aware of the implications of the technology. For example, while discussions were taking place in New Zealand during 1977 over what came to be known in this country as the 'tele-ad issue', the NSW Industrial Commission heard a demarcation dispute that had arisen over similar technology.[2] The hearing followed a six-week strike at the Fairfax plant in Sydney. In its judgement of August 3 of that year, the Commission gave clerical workers control over the typesetting of 'phoned ads. During the hearing a representative of the management of Fairfax estimated that (as noted in Chapter 4) when the company introduced computerised typesetting, 420 positions held by Australian printing union members would be lost.[3]

The New Zealand Printing Union's collective interests were best served if control over typesetting was retained. Therefore the union pursued a strategy to bring the telephonist-typists (who were clerical workers)

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[1]This can be appreciated by considering that 40 per cent of all advertisements originated from telephone calls (memo to J.R. Williams, from the then General Manager, E.P.D. Cooney, October 17, 1981).

[2]Printing Trades Journal, May, 1977:50. (A copy of the issue was given to me in an early interview with the Secretary of the Canterbury Branch of the Union.)

[3]Ibid.

into the union as non-journeymen members - a strategy facilitated by the events which occurred in 1954 when TTS machines were introduced into newspaper offices.[1] For the reasons discussed in Chapter 5, printing tradesmen and union officials did not want another group of non-journeymen keyboard operators to join the union since they considered that TTS operators diluted the trade and union strength.[2] However, the threat of loss of control over the technology, and a drop in membership, was very real.

For their part, newspaper employers wanted to avoid the confrontation with printers that had occurred overseas.[3] The employers had good reason to believe that the Printing Union would refuse to work with non-union members engaged in typesetting tasks traditionally done by printers.[4] For example, in negotiations in the mid-seventies, employers sought the union's attitude to their proposals to install electronic equipment for direct-inputting of telephoned advertisements.[5] Responding, the union had "welcomed the opportunity for increased advertising revenue for newspaper houses but

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[1] See Chapter 5, Section 3(c).

[2] See Chapter 5, Sections (b) and (c).

[3] See Chapter 4, Section 3.

[4] Inferred from field data, and from written and oral submissions during the New Zealand Arbitration Court hearings - in Christchurch and Wellington, November 1981 - of the demarcation dispute between the printers and the clerical workers, referred to in the following section.

[5] W.H. Clement, National President of the Printing Union, Submission to the Court, November 1981.

maintained their traditional rights to typesetting".[1] During 1977, employers accepted the view of industry assessors that, since retrained telephonist-typists "were to be required to do a traditional printing function, i.e., the setting of type, provision had to be made in the Award for these functions".[2] As a result, Clause 35[3] was inserted into the 1978 Award,[4] restricting "computer input" to members of the Printing Union. The clause indicated the union's "unswerving attitude that typesetting [was] within the jurisdiction of the Printing Trades Union".[5] The crucial sub-clause, 35:5, read:

> *In offices equipped for computerised photo-setting, telephone operators receiving and processing copy for reproduction in the classified columns of a newspaper ... shall be members of the NZPTU.*[6] *Such workers may be non-journeymen operators specified under ... clause 17 of this agreement.*

Thus, by means of its strategy over Clause 35:5, and with employer co-operation, the Printing Union attempted to gain collective control over the technology. However, the strategy was not unanimously supported by union members, since it was in conflict with printing

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[1] Ibid.

[2] D.J. Patten, Executive Director of the NPA, Submission to the Court, November 1981.

[3] To avoid confusion in the subsequent discussion, this number refers to the relevant clause in the 1981 Award.

[4] February 23, 1978.

[5] W.H. Clement, op.cit.

[6] The New Zealand Printing Trades' Union.

tradesmen's interests in retaining individual control at the workplace. Clause 35:5 was seen as a "wedge" which would be used by employers to further deskill the trade of typesetting and reduce the work of the tradesman. In the words of a Christchurch Printing Union official, "it [was] TTS all over again".

The conflict within the Printing Union cohered in The New Zealand Herald Chapel's decision to negotiate with employers a separate house agreement in breach of Clause 35:5 of the Award.[1] This agreement retained the "independent identities" and skills of the clerical and printing staff.[2] The chapel's position over the issue coincided with that of Herald employers who wanted to retain "the image and character" of the newspaper.[3] The chapel's position, outlined below, shows clearly why printing tradesmen feared that Clause 35:5 could lead to objective deskilling of their trade and loss of employment opportunities:[4]

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[1]The special house agreement, negotiated in June, 1981, lapsed the following year when the Printing Union was successful in persuading the Herald Chapel to abide by the terms of the Award. Telephonist-typists at that newspaper office are now Printing Union members but are restricted to a limited range of typesetting work. No system of formatting ads had been implemented when fieldwork ceased.

[2]The submission of Wilson & Horton Limited (owners of The New Zealand Herald) to the Arbitration Court, Christchurch, November, 1981, p.8.

[3]Ibid.

[4]Op.cit.

> *Printing tradesmen [at the Herald] were unanimous in their dissatisfaction with the provisions of clause 35:5 of the award. While the clause was first introduced into the award in 1977,[1] at a time at which few newspaper companies were operating computer based classified advertising systems, its intent was quite clear. Once a telephone operator was classified as a non-journeyman keyboard operator producing on-line[2] copy there was no restriction as to the range of tasks she could perform on that keyboard provided that the information supplied to her originated from a telephone call and provided that the end product appeared in the classified advertising columns of the newspaper.*
>
> *Thus if a newspaper was prepared to reduce its classified advertising style to a limited range and then programme these styles into the computer as simple formats, the work could now be performed by a non-indentured worker covered by the terms of the Printing Union and a substantial portion of the work once performed by the printing tradesmen would disappear.*

As this quotation suggests, under a system of fully computerised typesetting, programs or formats could be written which would incorporate the tradesman's ability - working with straight text - to visualise the finished ad[3] and select the appropriate computer codes for the required font,[4] point-size, tabulation and horizontal spacing. Keying in a simple code for each format, therefore, would allow advertising copy to be tabulated and spaced automatically in the pre-selected font. Coding for

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[1]The clause was negotiated in 1977 although the Award was dated February 23, 1978.

[2]Direct into the computer.

[3]As I have shown previously, printers distinguished between two kinds of ads: run-on ads, simple ads which could be typed with limited typographical skill; and space or spaced ads requiring vertical and horizontal space to be inserted between words or figures within the line, and between the lines. Spaced ads might also require borders, or other special typesetting features (see Figure 2, p.51).

[4]A complete set of type of a particular style.

each format could then be learned by non-journeymen keyboard operators. Thus, allowing non-journeymen clerical workers into the union would further facilitate the process of objective deskilling which commenced with the introduction of the TTS machines.

(b) Conflict Between the Clerical Association and the Printing Union

In January, 1980, the NZ Clerical Employees' Association[1] contested the Printing Union's claim to coverage of the tele-ad operators. Throughout the protracted demarcation dispute which ensued,[2] the Association contended that the tele-ad operation under the new computerised system remained clerical in nature. The Association refused to yield its traditional coverage of the clerical workers involved, although it was prepared to accept a division of membership on the basis of printing and clerical work respectively.[3] The Printing Union continued to insist on exclusive coverage of the tele-ad work since the operation involved typesetting.[4]

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[1]The national body of clerical workers' unions, hereinafter referred to as 'the Clerical Association'.

[2]The dispute was not resolved until November, 1981.

[3]Letter from J. Slater, Secretary of the Clerical Association, to officers of the Association.

[4]Printers at Wellington Newspapers Ltd. maintained the union's right, provided for in Clause 35:5, to cover people performing typesetting functions (W.H. Clement, Submission to the Arbitration Court, op.cit.). Production staff were not prepared to handle output from the production computer if non-union members were inputting to the data base since that was in breach of the Award (D. Hume, Secretary, Wellington Branch of the Printing Union, Submission to the Court, November, 1981).

Discussions between the two unions, and with the employers, failed to produce a solution.

In February 1980 the Clerical Association referred the matter to the Federation of Labour (F.O.L.).[1] The Printing Union agreed to F.O.L. involvement, but not to any decision-making by the Federation.[2] In May 1980 the Federation's national executive recommended a "job-sharing and splitting exercise" along traditional lines so that workers remained at their existing jobs. Clerical workers would record the clerical content of the ad by inputting that information into the computer terminal, and printers would call this work back on screen and insert information relating to compositing work.[3] The Clerical Association accepted the F.O.L. decision but the Printing Union rejected the "double-handling job-splitting, sharing scheme as impracticable" since, in the change to computerised typesetting of 'phoned ads, "employers were most interested in labour-saving - in elimination of unnecessary handling".[4] Subsequent meetings with the F.O.L. as mediator produced several alternative schemes but all were rejected by the printers. On June 29, 1981,

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[1]Telegram from K.G. Douglas, Secretary of the New Zealand Federation of Labour to the Printing Union, February 7, 1980.

[2]Letter dated February 18, 1980, from J. Slater to K. Douglas.

[3]Memorandum, "Printers/Clerical Workers' Dispute: F.O.L. proposals", May, 1980.

[4]W.H. Clement Submission, op.cit.

the Wellington Clerical Workers' Union applied to the Arbitration Court to settle the dispute.[1]

Membership of the Printing Union meant that tele-ad operators gained a significant improvement in wages and working conditions.[2] Therefore, objectively, their interests coincided with those of the Printing Union in its strategy over Clause 35:5. As a Canterbury Clerical Workers' Union official saw it,

> *clerical workers haven't got loyalties to any union. They've got to belong to a union so they'd choose the one that'd pay the most. The carrot was waved before their nose and they took it. You can understand them. Their natural response would be 'what's in it for me?' The Printing Union was looking for heads. Their membership was dwindling.*

In March or April,[3] 1980, 21 telephone operators at Wellington Newspapers Ltd. resigned their membership of the Wellington Clerical Workers' Union and joined the Printing Union.[4] Similarly, when the change to computerised typesetting was completed at The Press, 18 operators

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[1]Four days earlier the Canterbury Clerical Workers' Union made an application to the Court to settle a similar demarcation dispute at The Press in Christchurch.

[2]During the Court hearing (in 1981) it was estimated that the women would get about $30 more per week under the Printing Award. As indicated earlier, the Award provisions also included a redundancy clause which would give them financial compensation in the event of layoffs.

[3]The actual date is uncertain.

[4]An interim agreement (dated February 13, 1980) between the Printing Union and the Clerical Association enabled Wellington Newspapers to proceed with the changes in technology. Under the agreement, the tele-ad operators were to remain members of the Printing Union until the dispute was resolved.

at that newspaper office resigned their membership of the Canterbury Clerical Workers' Union on June 18, 1981.[1]

(d) The NPA and the Printing Union Co-operate

The Arbitration Court met in Christchurch and Wellington in November 1981,[2] to resolve the respective demarcation disputes. During the hearings the NPA and the employers concerned backed the Printing Union's stand over the issue.[3] The NPA's Executive Director, D.J. Patten, told the Court that his Association believed the work of the tele-ad operators must be covered by the Printers' Award since typesetting was a traditional function of Printing Union members, and tele-ad operators were involved in typesetting when they carried out their work on the VDTs.[4] Similarly, employers at Wellington Newspapers and The Press argued that taking ads over the telephone, and entering the details and typesetting codes into a computer terminal, constituted printing and not clerical work. The Clerical Association and its constituent unions claimed that the computer terminal had merely replaced the typewriter, since - instead of manually controlling the typewriter for spacing under the old system - the worker now typed commands to the computer which provided the

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[1] The Press, November, 1981. The actual number of women involved at the two newspapers was in each case higher, but some of the telephone operators were not members of any union.

[2] November 2-5 and 9-11 respectively.

[3] See Chapter 5, pp.119-121 for a discussion of the printers' bargaining strength in its strategy over 'the tele-ad issue'.

[4] Submission to the Court.

spacing and type-size.[1] For this reason, they argued, the computer carried out the printing functions, not the workers. The Printing Union responded: before setting the ad, the tele-ad operator had to visualise the way the ad would appear in the paper and insert the typesetting codes accordingly. This was printers' work.[2]

Evidence was given in Court that employers were anxious to avoid any industrial disruption which could ensue if the tele-ad operators did not join the Printing Union. Wellington Clerical Workers' Union Assistant Secretary, P.E. Tennet, for example, told the Court that in the early stages of the dispute the Printing Union

> *threatened to refuse to accept work from the tele-ad operators thereby affecting the working of the newspaper so far as classified advertisements were concerned. At one stage it appeared as if a major industrial confrontation might ensue and [sic] with a likelihood of stoppages in the newspaper industry.*[3]

Employers at Wellington Newspapers had, she said, "been anxious to avoid industrial disruption when it [had] been suggested by the Printers' Union".[4] General Manager, W. Kelso, conceded in cross-examination that the possibility certainly existed "that the Printing Union would deal with the dispute by simply refusing to handle the work from the tele-ad operators".[5] He pointed out,

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[1] P.E.Tennet, Assistant Secretary, Wellington Clerical Workers' Union, Submission to the Court.

[2] See, for example, Submission of J.W. McKenzie, FOC, Printers' Chapel at The Press.

[3] Op.cit.

[4] Ibid.

[5] Cross-examination by Wellington Clerical Workers' Union counsel, R.A. Heron, November 10, 1981.

however, that although the union was very firm, "there were no threats" of industrial action.[1]

On November 20, 1981, the Arbitration Court ruled in favour of the Printing Union.[2]

3. Job Structure at The Star

The organisation of the typesetting process and the associated job structure under The Star's new Classified Management System, CMS, depended upon three related factors: (a) the events surrounding Clause 35:5, the Court hearing, and its outcome; (b) the variable nature of computer technology: and (c) relations of competition and co-operation at The Star, and between The Star and Christchurch's morning newspaper, The Press.

(a) Clause 35:5 and the Court Hearing

The Court ruling established that the telephonist-typists at The Star were legally members of the Printing Union. As a consequence, printing tradesmen in the composing room were prepared to handle the women's work, averting any disruption to production which might have eventuated if the Court had ruled in favour of the Clerical Workers' Union.[3]

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[1] Ibid.; Printing Union President, W.H. Clement, in cross-examination by Heron (November 11, 1981) agreed that "very strong feelings" were expressed by the tradesmen at Wellington about women doing the work if they were not union members. However, he also emphasized that although the position "was made quite clear through chapel meetings ... no threat was made to management".

[2] The Court issued its decision on both demarcation disputes at the same time.

[3] During a chapel meeting which I attended in October, 1981, the men voted unanimously to refuse to allow the telephonist-typists to retrain on VDTs until they became members of the union "as laid down in Clause 35:5 of the Award".

Acceptance by the printers enabled The Star's management to introduce the CMS system which eliminated the double handling of a large proportion of telephoned advertisements.[1] At the same time, the system enabled management to streamline its billing and accounting procedures.

The Printing Union's successful strategy over Clause 35:5 ensured that The Star's Chapel retained control over the technology since those who used the visual display terminals had to be members of this Union. Chapel control meant that the printers could influence both the development of the CMS software[2] and the training programme for the telephonist-typists, issues which are discussed below.[3]

The delay in the CMS system's implementation enabled the majority of the tradesmen in The Star's composing room to acquire typing and computer keyboard skills without direct competition from skilled typists also undergoing training on the terminals. (The significance of this for the men's subjective perceptions of their jobs has been discussed in the previous chapter.) However, as I have shown, the Court's ruling meant that for the first time at The Star female non-journeymen were able to use computer typesetting equipment formerly restricted to male tradesmen. The women's encroachment onto VDTs potentially reduced the

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[1] A small proportion of the more complex ads received over the 'phone were to be routed to tradesmen who would insert the typesetting commands.

[2] See Appendix A.

[3] And more fully in the following chapter.

amount of work available for printing tradesmen. Moreover, it posed a threat to their typesetting skills[1] and - significantly - their status as skilled tradesmen. To reiterate, under the hot-metal system and to a lesser extent under CM11, the tools of trade of linotype machine and VDT distinguished the tradesman's job from that of a non-journeyman clerical worker. With the direct-inputting made possible by the computerised CMS system, each occupational group used the same computer terminal for typesetting. Only the software differed and this was not, of course, evident in a casual inspection of the work.[2]

The Court hearing also threatened the men's subjective perceptions of their work on computer terminals. In order to establish the Printing Union's right to coverage of tele-ad operators' work, printers and employers needed to show that printers' skills were fundamental to computerised typesetting of telephoned advertisements. Submissions made to the Court repeatedly emphasized this. For example, Wellington Newspapers' General Manager, W.J. Kelso, pointed out that the retrained tele-ad operators needed to have knowledge and skills relating to the printing trade, including:

> 1) the style of the various advertisements to make them consistent with the best presentation of the paper and the enhancement of their selling capabilities,

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[1] Through the technical deskilling made possible by the use of formatting.

[2] Admittedly, a small number of more sophisticated terminals used in the terminal room differed slightly in appearance.

2) printing terminology,

3) printing practice, and

4) typography.[1]

All of these skills, he said, "have been known and practised manually or by machine or by computer by the printing trade for some hundreds of years" (ibid.).

An ex-linotype operator in charge of training telephonist-typists for Wellington Newspapers explained that one of the most difficult aspects of training was to

> *establish and develop the trainee's capacity to be able to visualise what appears on the VDT screen and to relate that to the advertisement as it will appear in the newspaper. This ability develops with training and experience. It is an ability and function which printers have always required in composing and preparing advertisements.*[2]

In his final submission, counsel for the Printing Union[3] argued that this new skill of "visualisation" was not simply the skill of scanning the screen competently. The material on screen contained a mixture of text and printers' commands whose appearance was quite different from that set out in the final advertisement. Visualisation, therefore, was the "acquired art of correlating what is seen [on screen] with a printed ad that will look quite different".[4]

During the Court hearing, comments made in cross-examination reinforced the view that female clerical workers were able, or potentially able, to do the work of skilled

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[1] Submission to the Court.

[2] C.W.H. Shaw, Submission to the Court.

[3] J.B. Stevenson.

[4] Ibid.

tradesmen. In reply to a question put to him by the Canterbury Clerical Workers' Union counsel,[1] for example, the Production Manager at The Press, L.R. Sullivan, commented that after training and experience on the job, "hopefully the girls will be interchangeable with those in the composing room". Later that day in response to a question by counsel for the employers, Sullivan told the Court that the women at The Press were setting "complicated weights and speed limits of vehicles. These are the skills of the printers ... and we now pass them on to the girls."

Defining the women's work as printers' work in this way entailed acknowledging that non-journeymen typists could do the work of skilled tradesmen. Present during the hearing in both Christchurch and Wellington were chapel, branch, and national Printing Union officials, all practising, or former, tradesmen. Details of the hearing and ruling were reported extensively in New Zealand newspapers, and these reports would have been typeset by printing tradesmen. Moreover, the Court ruling legally defined the women's work as that of a printer. Based on previous fieldwork experience and evidence from the Court proceedings it seems reasonable to conclude that the printers would resent hearing and reading their work defined in a way which they perceived as deskilling their trade.[2]

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[1] November 3, 1981.

[2] For example, in summarising the case for the Canterbury Clerical Workers' Union, counsel commented: "The weight of the printers' case is that it takes one month to bring a typist to the level of skills of what was the old-fashioned compositor". At this point the antagonism of Printing Union officials seated behind me in the Court was quite marked.

(b) Computer Technology: its Variable Nature

As the previous section has shown, arguments presented to the Arbitration Court typically described computerised typesetting of telephone advertisements as a specific technical process. For this reason they implied that the new technology determined work organisation and job content in some absolute sense. In terms of an analysis of the job structure which emerged at The Star, it is important to appreciate that the outcome of the Court hearing determined only that tele-ad operators - as members of the Printing Union - would operate computer terminals. The area of discretion left to the individual tele-ad operator varied according to the extent to which typographical skills and knowledge were incorporated in the design of the system in the form of software, and this was not determined by the technology, but was the outcome of a process of in-house negotiation.

Put simply, at one extreme - with minimal programming - tele-ad operators would key in only the text of the advertisement as the customer relayed it to them over the phone. All typesetting instructions would be entered in by tradesmen after the advertisement had been routed to them electronically. Only after this second handling of the advertisement would it be sent to the photosetter for photocomposition.

At the other extreme - with the system fully programmed - the run-on and space advertisements could all be typeset by tele-ad operators using 'formats'. As indicated earlier, a format was a shorthand way of instructing the computer to call up pre-determined or programmed type-

setting codes which automatically determine the position, shape, size and spacing of the text of the advertisement. Instead of visualising how the ad would appear and selecting typesetting codes for the individual words and lines of text, the operator would be limited to visualising which format best suited the entire text and then keying in the coding. Moreover, a formatted advertisement could be sent directly, by the tele-ad operator, to the photosetter for photocomposition.

(c) Conflict and Compromise

Although the Printers' Chapel at The Star collectively supported the union's stance over Clause 35:5, like the men in the Herald Chapel, many of the tradesmen were unhappy with the implications - for job opportunity, skill and status - of the union's action and the Court ruling. The Star Chapel therefore pursued strategies:

1) to retain the objective skill differences between the two jobs; that is, to resist the formatting made possible by Clause 35:5, and the Court's ruling; and

2) to retain their subjective perception of VDT work as more skilled than the work of a tele-ad operator.

Despite the increases in productivity made possible by fully implementing a system of formatting, The Star's management was constrained by several factors. Resistance by the printers and their potential for disrupting production was one factor. Another was the importance to The Star of retaining a competitive edge over the morning newspaper, The Press. As the Production Manager put it at the time, "going over to formats would be like putting out sausages

from a sausage machine", whereas, when tradesmen set the ads, the customers could be offered a wide choice of advertising styles. A third factor was the awareness of management that the use of formats would lead to loss of trade skills and status.[1]

Management and chapel negotiated an agreement[2] that permitted the formatting of 23 of the more common typesetting styles and their use (under the new CMS system) in direct-inputting space ads originating over the telephone.[3] This limited formatting meant that the men still set the more complex, single and double-column, space ads and continued to be responsible for all tabulated material appearing in the paper.[4] The printing tasks carried out by the newly-trained tele-ad operators were limited to setting straight run-on advertisements and using formats to set the simpler 'spaced' advertisements.[5]

4. Summary

Thus, the nature and timing of the changes occurring under the CMS system can be explained as the outcome of

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[1]The Production Manager at the time was an ex-linotype operator.

[2]Details of why the chapel yielded in its position on formatting are unclear, but it is presumed that 'horse-trading' was involved.

[3]Approximately 20 per cent of telephoned advertisements at The Star are space ads.

[4]At the same time, moves have been made to replace the loss of work by developing an alternative source of typesetting, commercial or tradesetting. Since this work is non-standardised, of all the typesetting done at The Star, it has the greatest potential for exercising typographical skills.

[5]The extent to which objective skills in their respective jobs were recognised by tradesmen and tele-ad operators alike is explored in the following chapter.

struggle, at both national and shop-floor level, for control over the technology. Significantly, the struggle took place within the context of the flexible or programmable nature of computer technology. The New Zealand newspaper employers wanted to utilise the full potential of this technology which allowed for single keyboarding of telephone advertisements. Organising work in this way secured more efficient, error-free production and cut wage costs. The Printing Union, at the centre of the struggle, fought to retain membership levels and its traditional control over typesetting. Thus, it accepted, in principle, single keyboarding of telephone ads and sought to bring the telephonist-typists (who were clerical workers) into the Printing Union as non-journeymen members. A significant number of printing tradesmen, however, resisted the objective and subjective deskilling which this strategy facilitated because computer technology enabled their typographical knowledge and skills to be converted into computer formats and learned by non-journeymen clerical workers. A split developed within the Printing Union, and among newspaper employers, over the proper strategy for the system's implementation. This split focused on the implications for trade skills and job opportunity of Clause 35:5 of the Printing Award. This clause gave the Printing Union membership coverage of tele-ad operators inputting ads into the computer.

A protracted demarcation dispute between the Clerical Workers' Association and the Printing Union ensued, in which, as I have shown, tele-ad operators resigned from the Clerical

Union. The Arbitration Court met to resolve the issue. Events leading up to the Court ruling, and the hearing itself and its outcome, had implications for the implementation of the CMS system. At The Star, as at other newspaper offices in New Zealand, the question of how a classified management system would be designed was decided - within the context set by negotiations over Clause 35:5 - as a result of in-house negotiations among and between employers and different occupational groups. Moreover, the relations of conflict and alliance between different groups of workers at both national and shop-floor levels were crucially influenced by internal labour markets based on objectively-determined and subjectively-perceived differences in skill.

The dilemma set The Star's Chapel by the struggle over Clause 35:5 was not simply to prevent further objective deskilling - made possible by the technology and the newly-won access to it by non-journeymen operators - but also to resist the subjective deskilling that was engendered by the struggle. Thus, retraining for telephonist-typists at The Star involved not only learning typesetting skills and keyboard proficiency; it also involved a hidden curriculum by which the men in the composing room attempted to re-assert the status differential between their jobs and those of the former clerical workers. In the chapter which follows I examine the experience of the changeover to the new classified management system in which the issue of subjective deskilling played a central role.

CHAPTER 10

THE EXPERIENCE OF CHANGE

1. Introduction

Having analysed the process by which the CMS system came to be implemented at The Star, I turn now to examine the effects of that process on the men and women involved. In Part Three I showed how the critique of Braverman's theory which developed from the early fieldwork led to an analysis of the subjective aspects of changes in skill. In turn, this analysis led to a detailed study of the experience of transformation to the new CMS system. The present chapter focuses on key aspects of that experience. It documents the lead-up to the CMS system, its actual implementation and the period after the system became routine. In doing so, the chapter illustrates recurring themes in the thesis and, at the same time, it stands in its own right as a record of change.

The following section (Section 2) provides a detailed description of the new labour process associated with the CMS system, a description which demonstrates the range of manual and intellectual tasks that can be replaced by computer-based systems of production.[1] Section 3 summarises the effects

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[1] See Chapter 1.

that the new system had on job losses and job changes among the occupational groups which were involved. One of the consequences of the social process described in the previous chapter was a two-year delay in implementing the new system, and in Section 4 I examine briefly the effects which this continuing period of uncertainty had on the groups involved. Section 5 focuses on the occupational group which experienced the most fundamental changes to their work - the telephonist-typists who were retrained to become tele-ad operators. A detailed examination of their experience of the period leading up to, during and following the changeover relies on the analysis of skill (objectively-determined and subjectively-perceived) developed in Part Three of the thesis.

The CMS system transformed the method of processing classified advertising: the recording of the text, its typesetting and composition, and the costing and charging of the ads. The technical description in the following section focuses on the processing of classified advertising material received over the telephone.[1] However, it is important to appreciate that the CMS system is now used to handle all classified ads. Advertisements arriving at The Star in written or typed form are keyed into the computer - from this hard copy - by VDT operators. The direct-inputting of 'phone ads, facilitated by the CMS system, eliminated the double-handling which formerly occurred when these ads were processed - under the CM11 system - by the VDT operators working from the hard copy produced by the telephonist-typists.

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[1] Commonly referred to as 'phone ads'.

I turn now to a description of the flow of classified advertising before and after the changeover to the CMS system. This description amplifies the brief outline in the preceding chapter.[1]

2. The Processing of Classified Advertisements

(a) The CM11 System

Figure 4 (p.272) depicts the flow of advertising copy after it was received from four main sources, telephones, counter, mail and sales staff. Using a headphone and typewriter, a telephonist-typist recorded on an ad form - referred to as an 'invoice' - the following details: the text of the advertisement, typesetting style preferred by the customer, classification and insertion date(s), and the customer's name and address. She then checked the wording of the advertisement by reading it back to the customer.

During the 'phone call the telephonist-typist determined whether the customer had an account with the company and recorded this information on the invoice. She also consulted a list of the names of customers considered to be credit risks, and, if necessary, referred the customer to the accounts department. Invoices of 'phoned advertisements, together with those from the other sources, were directed to the 'copy desk' where they were checked for errors and marked up for typesetting. From there the invoices left the classified advertising department by Lamson tube for the printers' box in the composing room, where the printer sorted

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[1] See Section 1.

the ads for typesetting on the VDT.[1] Proof-readers checked computer print-outs of the ads against the original hard copy, and errors were corrected by the VDT operators.

As explained in Chapter 7, ads which were typeset under the CM11 system were stored in computer memory for subsequent processing and retrieval on the 'run-date'. For example, if a customer 'phoned instructions to a telephonist-typist altering or cancelling the advertisement, she would record details on a slip of paper and forward this to the composing room. There a VDT operator would recall the ad from storage onto the screen of his terminal and, using the keyboard, make the appropriate changes. On the appropriate run-date, ads were recalled from computer storage by a system controller, and photoset in alphabetical order in columns of the correct classification. Subsequently the invoice was sent back to the classified advertising department where 'charging clerks' calculated the cost of the ad in the following way. After the day's paper was published, the printed version of the ad was used to calculate manually either the number of lines (for run-ons) or the length (for space ads). The charging clerk used this measure and the relevant rate for the ad to calculate its cost. Rates varied depending upon a number of factors including type of classification, column width, day of issue and number of times the ad was repeated.

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[1]For the sake of simplicity, reference to the work of TTS operators has been omitted here.

Once advertisements had been 'charged' they were sent to the accounts department, manually sorted into alphabetical order and stacked in two batches - 'ledger accounts' (regular advertisers) and 'sundries'. Accounts staff located the ledger account number from a list and recorded this on the invoice. Batches were then directed to 'punch girls' operating computer terminals, who 'keyed in' the names and addresses and billing information from the invoices. Each night this information was sent by courier to The Star's parent company in Auckland. Invoice statements were returned by courier to Christchurch and manually placed in envelopes and mailed to customers.

(b) The CMS System

Under CMS, the system for dealing with 'phone ads was transformed (see Figure 5, p.274). Retrained telephonist-typists, referred to as tele-ad operators, still use headphones, but now they 'key' the information directly into a VDT. The text appears superimposed over a standard 'ad form' displayed on the screen. Names and addresses, and typesetting and insertion details are entered in appropriate places in the form. Typically, computer commands[1] for type-setting run-on advertisements are entered simultaneously with the text of the advertisement. However, with space ads the operator enters only the text and simple typesetting commands during the actual conversation with the customer. When the call has been terminated, the operator determines

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[1]This term has been used rather than the more strictly correct term, format, to avoid confusion with the use of the term in the previous chapter.

which of the 23 formats suits the particular text and the customer's requirements, and then enters the appropriate format code.[1]

Using special 'function' keys on the terminal keyboard the tele-ad operator transmits the information to the central processing unit of the computer. The screen clears and within seconds the text reappears.

As the tele-ad operator records details from the customer she uses a special function key to enable a check to be made of a bad debtors' list stored in the computer memory.[2] Whenever a customer's credit rating is in doubt, a print-out of the information automatically alerts accounts staff. A check can then be made before staff decide whether the customer's advertisement will run, be held over, or be deleted ('killed') from the system.

Under the CMS system, charging is carried out automatically. Information dealing with the variety of special advertising rates available to The Star's customers is programmed into the computer. After the advertisement has been automatically hyphenated and justified to the correct column width, the cost of the ad is calculated by a computer program and appears on screen. When this procedure is carried out during the telephone call, the tele-ad operators can use the cost as a guide to assist customers and to promote further sales.

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[1] Subject to the restrictions placed on the work of the tele-ad operators as an outcome of the social process described in the previous chapter. This is discussed below.

[2] A credit control facility has been programmed into the computer.

Once the tele-ad operator has read the advertisement back to the customer and is satisfied the details are accurate,[1] she transmits the ad back to the central processor unit for storage, subsequent amendment if changes are required by the customer, and for photocomposition.

Since CMS involves direct-inputting by tele-ad operators, the majority of run-on and space ads originating over the telephone are printed without further 'handling'.[2] Unlike work organisation under the CM11 system, therefore, such advertisements do not require further processing by the VDT operators, and are no longer checked either at the copy desk or by proof readers. The text of specified advertisements, however, must be 'queued' (or directed) to 'mark-up' so that typesetting instructions can be keyed in by printing tradesmen. These advertisements are also proof-read in the reading room. Advertisements which are queued to mark-up include all 'agony' classifications[3] such as 'BIRTHS', 'DEATHS' and 'IN MEMORIAM'. In addition, tele-ad operators must 'queue' any advertisements more than two columns wide and those which require complicated marking, including unusual characters, tabulation, borders and balance sheets.

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[1] Corrections are made by returning the 'cursor' to a position on the screen over the character or word to be changed or deleted, and executing one, or a few, keystrokes. The cursor is a small, white, blinking rectangle displayed on the screen of a terminal. It serves as a pointer to mark the operator's 'typing' position on the screen.

[2] System controllers do, of course, enter in a command to the computer to enable the advertisement to be photoset on the appropriate run-date, but this operation was also performed under CM11.

[3] The decision to queue all 'agonies' to VDT operators for subsequent proof-reading was not a political one, but was made to ensure accuracy in those ads where errors were most likely to upset customers.

As the previous chapter showed, it would have been technically possible to adopt extensive formatting and avoid this double keyboarding and multiple handling.[1] The structure of work which emerged with the changeover to CMS, resulted from the social process described in the previous chapter. Similarly, VDT operators (printing tradesmen) and not the tele-ad operators (non-journeymen) key in all hard copy classified advertisements (originating over the counter, by mail or from sales staff), with the exception of 'cash ads' which, for technical reasons,[2] are now handled by tele-ad operators.

Under the CM11 system, the customer's name and address or account number required for billing was recorded on the invoice when the advertisement was first lodged at The Star. The invoice passed through a series of stages during which the ads were priced before key punch operators transferred billing information into computer storage for processing into invoice statements (see Figure 4, p. 272).

Under the CMS system, the electronic form replaced the paper invoice and multiple handling is avoided. Billing information for a 'phoned advertisement is keyed directly into

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[1] However, fieldwork experience with the system suggests that, in practical terms, the existing number of tele-ad operators, working under the pressure of a steady stream of 'phone calls - a situation that occurs typically on Fridays depending upon fluctuations in advertising volume - cannot easily combine effective customer interaction with the task of visualising the text of an advertisement before selecting and entering the appropriate format code. Therefore under a system of extensive formatting more staff would be required.

[2] Problems arose after the change to CMS when customers were billed for advertisements for which they had already paid cash.

the system by the tele-ad operators, who simultaneously carry out both their former work on the paper invoices and that of the key punch operators. Similarly, billing information for advertisements received in written form by mail, over the counter or from sales staff, is entered into the computer system by VDT operators, again by-passing key punch operators. A 'billing run' is carried out each day to produce a magnetic tape containing the price of the ads lodged by customers, and their names and addresses for billing. This tape is sent by courier to Auckland and processed in the way described for CM11.

3. Consequences for Staff

As these descriptions of the two work processes suggest, the changeover from CM11 to CMS had consequences for the workload and job content of five main occupational groups:

1) Telephonist-typists.
2) TTS operators.
3) Clerical workers (other than telephonist-typists).
4) VDT operators.
5) Readers.

In this section I will briefly describe how each group was affected. In Section 5 the work of the telephonist-typists is considered in detail.

1) Twenty-two telephonist-typists retrained on computer terminals to carry out computerised typesetting. (Retraining is discussed below). Two telephonist-typists decided not to retrain and were re-located in clerical jobs elsewhere in the building.

2) The TTS operation was gradually phased out by natural attrition (see Chapter 5).[1] None of the TTS operators was replaced. Although the TTS operation was obsolescent,[2] two part-time TTS operators remained on TTS machines since management refused to make the women redundant and, as I have explained in Chapter 5,[3] the chapel would not permit the women to retrain on computer terminals. Adaptations had to be made to enable classified advertising material set on TTS machines to be processed within the CMS system, and this has given rise to 'inefficient practices' from a technical point of view.[4]

3) The CMS system eliminated the need for charging clerks. Three full-time charging clerks were relocated to jobs in other departments where natural attrition had occurred. Staff checking ads on the copy desk was reduced from two full-time and three part-time workers to one full-time and one part-time worker. Excess staff were either relocated or, in the case of three part-timers over the age of 65, made redundant. The job previously done by a clerical worker handling contract ads was also eliminated. The staff member concerned was relocated.

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[1] Section 3(b).

[2] It is based on the production of punch tape (which has to be fed into computer storage using a paper tape-reader) rather than on information keyed directly into the system using a VDT. Moreover, since the electronic form cannot be used, billing cannot be computerised, but has to be handled manually in the manner described for the CM11 system.

[3] Section 3(b).

[4] However, in March, 1983, this was discontinued, and TTS operators now set only editorial material.

4) VDT operators (former linotype operators or comps) have received further retraining and learned how to enter advertisements into the system using the electronic form. Since billing details must be entered for all classified ads, the men were required to key in this information in addition to the text and the typesetting instructions which they formerly entered under CM11.[1] With the implementation of a system of formatting space ads, the men's workload has dropped slightly. However, tele-ad operators sometimes preferred to direct a space ad to a tradesman even when they were permitted to handle it themselves. The decrease in workload arising from the single keyboarding of run-on ads has been absorbed primarily by the attrition in the TTS department, since TTS operators handled 80 per cent of the run-ons under the CM11 system. Any overall decrease in the VDT operators' load appears to have been compensated for by natural attrition among the tradesmen themselves and by increases in trade-setting.

5) Readers. Under CMS, the vast majority of run-on ads and some space ads are no longer proof-read. The reduction in workload has been partly offset by increases in tradesetting, but natural attrition has absorbed any overall decrease in work.

The effects that the new system had on job losses and job changes should be considered in the light of the discussion

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[1]The evidence is only fragmentary, but there were suggestions that some of the tradesmen resented having to enter the billing details for the ads. Since this was work formerly done by clerical workers, the men's response is consistent with the analysis of subjective deskilling in Chapter 8.

(in Chapter 4)[1] of the labour-saving potential of the technology, and by recalling the earlier distinction between technology's effects on the job and on the worker (see Chapter 7).[2] With the exception of the three part-time workers over 65, no worker was made redundant by the introduction of the CMS system, and the displaced workers were relocated. On the other hand, jobs have disappeared[3] and the workload in several departments has diminished. The policy of natural attrition pursued in the first stage of computerisation (hot metal to cold type) has continued.

4. Delay in Introducing CMS

As the previous chapter showed, the changeover to CMS had been foreshadowed since before the start of the fieldwork in August, 1980. The delay in its implementation helped foster a climate of speculation and uncertainty about job security for those workers who expected their work-load to diminish or their jobs to disappear altogether under the new system. The issue of job security surfaced and receded over the intervening period as dates planned for implementation approached, then passed. Some employees sought out alternative employment. Given the national economic situation, however, many preferred to wait to see what eventuated when the system was finally brought in. Management assurances were given that staff whose jobs disappeared with the changes

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[1] Section 3.

[2] P.213.

[3] It is difficult to ascertain with certainty the exact number of jobs lost as a direct consequence of the CMS system - for the reasons discussed earlier (Chapter 2, p.55, Footnote 2). An overall assessment of the job losses that have occurred at The Star, and their implications for worker control, is given in the concluding chapter.

would be relocated in other departments in the building. Speculation about job security was fuelled, however, when senior management changes occurred in June 1981 and company policy towards redundancy appeared to alter.[1] In addition, since employees were generally aware that a number of departments were carrying excess staff, they expressed doubts that redundant staff could in fact be absorbed.

Over the period between August, 1980, and the phasing-in of CMS in March - June, 1982, employees spoke recurringly of the effects of the impending changes on their jobs. Over drinks in August, 1981, for example, Ted, a VDT operator, spoke of his reaction to comments by the company's Managing Director which had been reported in The Star earlier in the week.[2] Ted said he was on his day off when he read the article:

> *I yelled out to my wife. She came running [and he showed it to her]. It's really worrying. I'm the breadwinner in our family. Some families have two wage earners but in our family there's just me.*

He went on:

> *What upsets me is the idea that they've [management] used us to iron out all the problems and then they'll just bring their fancy women in. [Here he is referring to the use of non-journeymen to operate computer terminals.]*

As Ted saw it, newspaper employers had used a skilled workforce to make the difficult transition to computerised type-

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[1] See Chapter 5, p.149.

[2] See previous footnote.

setting; then they planned to do away with the printers and use typists instead.

Speaking in October of the same year, a chapel official and VDT operator echoed Ted's concern, and speculated that when tradesmen left or retired,

> *They [management] won't replace the men with apprentices. If the numbers drop they'd move to phase in journalists' inputting, then ... [and he paused]. It's just like waiting for the guillotine to fall.*

In December, after the Arbitration Court ruled that tele-ad operators were to become members of the Printing Union, The Star's management announced that the CMS system would be phased in "within the next couple of months". In the composing room there was talk of job insecurity, and the problems of meeting mortgage payments and supporting young children "if you lose your job". One day I was seated beside a VDT operator at his terminal when he suddenly asked,

> *Do they [the others in the terminal room] ever tell you that they feel trapped?*

I hedged[1] and asked what he meant. "Well, we know we wouldn't get another typing job, we wouldn't be good enough." I misunderstood him and thought he was referring to competing with typists for clerical work in general. What he meant was that the men felt trapped because there were not many other newspapers in New Zealand where they would be employed in preference to women, since the latter would compete successfully against men - unless they (the tradesmen) had "a strong union shop" to prevent it.

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[1]Since I did not discuss the responses of one person with another.

At The Star, however, as a consequence of the successful bargaining by the Printers' Chapel (Chapter 5[1]), typists in the TTS room were also concerned for their job security. Geraldine, a part-timer, explained in February 1981 that management would not be replacing any TTS operator who left. Since natural attrition had been occurring steadily in the department, she was worried. She explained why:

> *I love this job. What'll happen when the full-time girls go? Will they cut this work out?*
>
> *I enjoy my job. Even though I'm married now, I like typing. I've always wanted to do this. When I was young I used to say I'd like to type the stories that go in newspapers. I don't think I'd even get another job that would fit in with the home and the children. It makes me bitter. We're not tradesmen. [Pause] Now - I just think from week to week.*

In the reading room[2] during the latter part of 1981, there was speculation about the effects of CMS on the readers. The 14 readers were told by the Chief Reader that redundancies were inevitable and a third of the staff were expected to go.[3] John commented on the feelings of trepidation, insecurity and tension among them. As an example, he cited the occasion when one of the journalists came into the room and remarked, "Oh, you're still here. I am surprised." It had been only a jocular remark, John said, but it left people feeling quite uneasy after the journalist had gone. The tension surfaced in rumours and dissension among the readers about who would

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[1]Section 3.

[2]The name of the proof-reading department.

[3]This appeared to have been a strategy used by the then Chief Reader as a means of discipline, and was not apparently a directive from management.

have to go. Late one afternoon only two of the staff remained in the room. One made several cutting comments about the standard of work done by some of the other readers. She felt redundancies should be determined on the basis of ability, but agreed with the other reader that "probably it would be on the basis of 'last on, first off'".

The impending changes in work organisation in the front office also divided the clerical workers. The women who worked "on the 'phones taking ads" had the opportunity to retrain, and their jobs seemed secure. The remaining clerical workers were employed as charging clerks on the copy desk, handling contract ads, and in carrying out other clerical tasks. Most of their jobs would disappear when CMS was introduced. When training commenced in March 1982, the telephonist-typists became members of the Printing Union, gained pay increases and became the focus of attention of both management and computer personnel. Some of those who remained in the Clerical Workers' Union, and whose jobs were at risk, felt the distinction keenly. One commented:

> *I thought the women [on the telephones] - our fellow workers - would worry about us losing our jobs and express some concern, but only two have. It's a 'dog eat dog' world. Now we see ourselves as second-class citizens.*

Several clerical workers spoke of the "bickering amongst themselves" about "who should have to go" if redundancies occurred. Part-time workers felt insecure, and, as an older clerical worker commented, the "younger ones think the older ones should give up their jobs first".

The clerical workers were told that they would be relocated in other jobs, but several were dubious. "You're not

going to tell me that they'll buy this equipment and keep us all on," Glenys commented. "Those machines are going to do all our work." Debbie had this to say: "I think if they [management] did have something lined up for us they should say, but they've got so much on their minds that we're the least of their worries".

Several employees who shared this concern for the future of their jobs were less critical of management. One clerical worker noted the technical and industrial relations problems involved in the changeover and commented:

> *We were told at least a year ago [about CMS]. It was obvious it was going to affect our jobs eventually. But we didn't know how. We just went along in the interim.*
>
> *Q: Would you have liked to have been given more information?*
>
> *A: I don't think they [management] could have told us. Everyone's in the dark from the top down. It's all got to be treated very patiently.*

Because the system was so complicated, "you learn what changes will occur [to people's jobs] only after they [the technical changes] have occurred". Moreover, some of the actual details of the system could only be worked out as the implications of chapel rulings on different issues were worked through. But the clerical worker shared the concern of many about the future - "You just live one day at a time".

Not all employees viewed the possibility of job changes with concern. For some, the changeover to CMS provided the necessary impetus to encourage them to think of changing their job. For Sally, a charging clerk in the front office, CMS offered a welcome break:

> *Even if the job was going on the same for a year I'd be looking for other work. It's boring repetition. I couldn't stand going on.*

This was an attitude shared by a number of other workers in other departments at The Star, as Chapter 7[1] showed.

The evidence shows that the anxiety over job security - heightened by the delayed introduction of CMS - caused resentment against management and divided workers. The delay heightened the antagonism which the printing tradesmen felt towards the TTS operators and the telephonist-typists. In turn, this reinforced the men's subjective experience of de-skilling and hence reinforced their need to re-assert the status differential between their jobs and those of the tele-ad operators. This is clearly illustrated by Joy's comments in the conversation quoted below.[2]

5. Direct-inputting and the Tele-ad Operators

The remainder of the chapter focuses on the 22 telephonist-typists who underwent retraining as tele-ad operators. I describe how their work was organised under the CM11 system and their attitudes towards retraining. The retraining experience is then examined in detail. Work organisation before and after the changeover to CMS is compared, and the women's responses to the changes immediately following retraining and 12 months later are analysed.[3]

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[1] Section 3.

[2] P.329.

[3] This section is based on an in-depth study of the department in the weeks preceding and during the change, including a participant-observation study during a two-week training period with one group of women. I returned to the department one year later to monitor the effect of CMS after the system had become routine. During observations of work interacting with the customers, I wore a second set of headphones and sat beside the woman concerned as she took calls (see Appendix B

Of the 22 who retrained, five worked full-time hours. With overtime, the weekly hours of work of the remaining part-timers' ranged from seven and a half to virtually full-time. Typically, all the part-timers worked on Fridays, and their remaining hours were scheduled to meet the fluctuations in workload at different times and on different days of the week. The women's ages ranged from mid-twenties to late fifties, with most in the thirty to forty age group.

(a) The Work of the Telephonist-typist before CMS

The telephonist-typists worked in the 'phone ad section of the department and were located in the 'front office' of The Star. The following description shows how work was organised prior to the change.

The general arrangement of the work area can be seen in Plate 18. Between each set of the two rows of desks was a long, thin, continuously moving belt, down which completed invoices and cancellations, alterations and complaint forms were sent. On top of each desk at the left was a turret (or small 'phone exchange) which indicated incoming calls by displaying a flashing red or white light. The light flashed simultaneously on each of the turrets until one of the telephonist-typists pushed the switch to answer the 'phone. The women were encouraged to work at speed, and at busy times - if the 'phone was not answered within 20 seconds - the call went 'into delay' and a large orange 'delay light' began flashing conspicuously from a position high up on a pillar in the department. This light was obvious to anyone in the area. There was competition among some of the 'ad takers' to answer

PLATE 18: View of the 'phone ad section of the front office. Note the small 'phone turrets to the left of the telephonist-typist.

the 'phone first and take the call since this enhanced their opportunity "to earn commission".[1]

The telephonist-typist handled a range of calls including customers' requests to have an ad inserted, altered, repeated or cancelled; customer complaints; and requests for information about advertising rates, discounts, contracts and deadlines. The telephonist-typist responded to each call with the question: "Star Classified, can I help you?" or similar. Taking the details of a new ad from a customer, she inserted a new invoice into the typewriter and typed in the billing and insertion details and the text, assisting the customer with the wording when this was necessary. Frequently the customer required the ad to be inserted in a number of different classifications, or, as occurred with real estate agents for example, when the customer wanted to 'phone through several ads at once. Each ad required a separate invoice. Typically, the ad takers took down the full details for the first invoice, and only the text of subsequent ads. They 'stacked-up' the invoices beside the typewriter for completion "when the 'phones [were] quiet".

Many of the ad takers found it tedious having to retype, on a succession of invoice forms, the same name, address and phone number, and - where these were unchanged - insertion date and classification. On occasions the details might have to be repeated eight or nine times. In addition, the 'phone number usually appeared in two places on the form. On one occasion, Marjorie, for example, took a call from a man wanting to lodge two different ads, one of which had to

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[1] A bonus payment.

appear under three different classifications: 'CAR', 'SELL' and 'BOATING'. Marjorie took down the text for each ad on separate invoices. When the 'phone call was terminated, she put each invoice back into the typewriter, complaining as she repeatedly typed the same billing details. The next call came in just as she finished. As she replaced her headphones she muttered, "On and on we go, filling in the same damn invoice. Only the words [the text of the ad] are different."

Telephone calls concerning alterations or cancellations were dealt with in the following way: the women (ad takers) used a special form to record details of the changes together with the original ad number which was needed so that the ad could be retrieved from storage for the necessary changes to be made. To find the ad number the ad taker located the copy of the original invoice. If the ad had been taken earlier in the day, its carbon would be filed on a metal spike on the desk beside the woman concerned. The ad taker who was seeking the copy would go round to the different desks asking, for example, if "anyone remembers taking a 'Sits Vac' from Mr. Harper for a 'Painter and Paper Hanger'?". If the ad was taken prior to that day, the woman had to leave her desk to walk over to another section of the department where she consulted a computer print-out or flicked through a file of invoice carbons until she located the original ad. From this file she extracted relevant details to complete the alterations or cancellation form and send it 'down the belt' (the continuously moving belt) to the copy desk.

Requests for repeats of ads or complaints by customers followed a similar procedure, with the additional need to locate the printed version of the ad in the appropriate day's issue. Complaints were checked against the original invoice and the printed text, and actioned accordingly. Back copies of the newspaper were filed at the end of the rows of desks. If the customer was unable to specify the correct run-date and the first word used in the ad, the telephonist-typist could find the search time-consuming and frustrating. Nevertheless, the requirement to search the newspaper files and to locate the ad number from the carbons of the invoices afforded a legitimate break from sitting at the typewriter. It also facilitated friendly exchanges between the women as they passed each other's desks, walking to and from the files.

The telephonist-typists handled a variety of calls in which they were required to exercise tact and diplomacy regardless of the nature of the call and the tone which the customer adopted in response. As described earlier, customers 'phoned to complain about the appearance of their ads, or about errors in the text. In addition, the names of customers with a bad credit rating were recorded in a 'No Credit' list which the ad takers kept on their desk. They were required to consult this list during a 'phone conversation and advise the customer accordingly. Judy gave as an example an ad she had taken for 'BUY AND SELL COAL'. Since the caller was on this list Judy was unable to accept the ad from him, and she had to tell him. As she explained,

> *You try and do it while they're on the 'phone, otherwise you've got to ring back and sometimes they get stroppy.*

Another source of potential friction in dealing with customers was the confusion in communication that could arise. In illustration, one of the women explained that the previous week a customer 'phoned in, wanting to sell a "BATH, size 6". The ad taker thought the wording sounded "funny" but typed "size 6" and then read it back. The customer heard "five six" (that is, 5ft 6ins) because that was what he was expecting to hear, although the typist had read "size 6". Next day the customer rang to complain. On another occasion, June took a complaint from a real estate agent whose secretary, in lodging an ad, had asked if the heading could be centred. The ad was treated as a tabulated space ad and not a run-on, and the additional spacing cost more. As June tried to ascertain what had happened, the estate agent became annoyed and commented crossly: "Well, The Press got it right".

Other customers who were unsure of what they wanted to say kept changing the words of the text. For example, in dealing with a real estate agent who was new to the job, one of the women had to stop, go back in the text to insert a phrase and then return to her original position in the text - only to hear the agent make a further change. After the conversation ended, the telephonist-typist had to retype the entire invoice.

At times customers could be very unpleasant, as the following incident illustrates. I had just sat down beside Kaye as she was talking with a customer.[1] Conversation continued, and she finished the call. She removed her head-

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[1]And so I did not have the second head-set on.

phone with the astonished comment: "Do you know what he just called me? 'You old cow!'". She said the customer had 'phoned half an hour after the 9.00 a.m. deadline and wanted an ad in that day's paper. When she explained that this was not possible because the computer could not accept any more ads after the deadline, he pressed her. She repeated her explanation, reiterating that she was sorry, and that she could take the ad for the <u>following</u> day. The customer pressed her again, saying that he would pay <u>double</u> the price if he could get it in, but she apologised and refused, and it was then that he responded with abuse.

The 'phone calls were not always unpleasant or difficult, however, and the women enjoyed the opportunities for personal contact which interaction with the customer allowed them to establish. One Monday for example, Heather had just handled a complaint about an ad which failed to appear in Saturday's paper, when she took a call from a woman with an ad for the 'PETS FOR SALE' column. The woman was selling her one-year-old spaniel. She gave the ad, hesitated, then said,

> *I've got to do it [put the ad in] before I lose my courage - because I love him ...*

The caller's voice broke and, when she recovered, she went on to explain that she had to put the ad in to get rid of the spaniel because she could no longer afford to keep a dog. Heather listened to the caller sympathetically and reassured the woman that she <u>was</u> doing the best thing.

(b) <u>Anticipating the Change to CMS</u>

Anticipation about the changeover to computer terminals ranged from apprehension about a woman's ability to cope with

the new job (particularly when she was in her forties and older); and concern over coping with the technology while interacting with the public under pressure, particularly if the calls went into delay; to excitement about the challenge of learning something new. Judy echoed the feelings of many of the women when she said she was "looking forward to going on the computer. It's the way work is going. In time, all typists will be on them". Like Anne-Marie, however, most expressed some ambivalence. Anne-Marie said she too was looking forward to the change, but then hastened to add:

> *That doesn't mean I'll do well. I don't know how I'll go. I'm not looking forward to having to tell the customer to wait while I do something with the technology. But this job can get monotonous. You can come in on Fridays. All you'll get will be 'CARS FOR SALE' and 'SITS VAC', and you think 'Oh, I wish someone would ring up selling cats or something'.*
>
> *It will be exciting. Not that computers will change this [that is, the content of the ads] but it will be a change.*

Some, but not all, of those who saw themselves as 'older', expressed concern about their ability to successfully complete the retraining. Margaret, a woman in her early thirties, commented graphically:

> *It's a bit of a shake-up for an old lady like me, having to take my brains out of the freezer. [She reflected,] Oh I'm not that bad really. I'll do it, because I have no choice.*

Marilyn, in her forties, was more positive: "We're very lucky to get the chance at our age to retrain. [With the introduction of new technology] we could be out the window." She was keen to retrain and showed no apprehension about the new system.

(c) The Social Construction of Skill

Significantly, the women's expectations about CMS were influenced by attempts made by printing tradesmen and chapel officials to reassert the skill differential between their jobs and those of the ex-clerical workers (see Chapter 9).[1] For the reasons discussed in the two previous chapters, it was important for the men's subjective perceptions of their work on the VDTs that they defined, for themselves, and for the women, the greater degree of technical skill in their job relative to that of the tele-ad operators. To do this, they emphasised that the former clerical workers' restriction to typesetting formats gave them only limited knowledge of the computer commands, and involved only minimal use of typographical skills. The men also reinforced the view that only tradesmen could satisfactorily perform the work of a printer. As occurred earlier with the TTS operation (Chapter 8), this social construction of skill was underpinned by ideological assumptions based on gender. Although objectively there were skill differences in the typesetting tasks involved in the two jobs, the men minimised the skill required in typesetting using a VDT while interacting with customers, often under the pressure of a stream of incoming calls.[2]

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[1] It is difficult to quantify the extent of unanimity among the men over this issue. Based on extensive conversations, informal and formal interviews that spanned a two-year period, and attendance at two chapel meetings at The Star in 1981, it seems reasonable to conclude that this was a widely-held work norm in the comp room, although the salience of the issue for any individual tradesman appeared to vary markedly (see Chapter 8).

[2] The lack of knowledge of the tasks done by the respective groups was also a function of the degree of technical separation between the two aspects of the process under hot metal.

In the lead-up to the change to CMS the tradesmen conveyed their attitudes and views to the women in exchanges in the 'caf' and in remarks which filtered down to the 'phone ad section from the comp room and other departments.[1] After the training commenced, the issue became a focal point of discussion among the women, particularly in the early weeks of adjustment to the new system.[2] During training the comp room and 'phone ad section were brought into closer contact. The training room was a partitioned section of the comp room, and to reach it the women had to pass through the comp room. They also had more frequent contact with chapel officials. Furthermore, the system controller in charge of training, as a member of the chapel, explained during training sessions that the policy of the chapel was that only limited type-setting knowledge was accessible to the tele-ad operators.

Typically, the men's remarks and attitude appeared to increase the women's apprehension about retraining on computer terminals, but in a few cases it heightened their determination to master the system. A week before the training programme commenced, Deidre volunteered during lunch that she was apprehensive about the change:

> *We don't know a great deal [about what's involved]. We mightn't be able to cope [pause]. <u>That</u>'s what the men say. One of them showed us an ad that took three hours to set - 11 cms. double column. They say <u>we</u> couldn't do that.*

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[1] During early fieldwork in the 'phone ad section, eight of the women volunteered explicit information, cross-validated by staff in other departments, which suggested that the concern the men felt for their status as skilled tradesmen was influencing the women's views about the changeover.

[2] The issue surfaced frequently as the current training group compared notes with the other women when they met up during lunch, and when they returned to the 'phone ad section at the end of the day.

She went on:

> *The men make it seem like a secret society. [She elaborated.] You have to know the codes. They don't want us to know.*

"They need to make themselves feel needed, I guess," she added in explanation. Later she spoke again about the issue. "The men say all we'll do is the formats, just press one or two buttons. But we want to know it all." Marjorie also commented on the men's attitude. Like the TTS operators[1] she could understand the printers' feelings: "The men feel belittled. They're tradesmen. They've trained for five years." Like Deidre she reflected on the nature of the new job she would be learning. "The men say it's hard, but we don't really know what to think. We don't think it will be too hard ..." but her voice trailed off uncertainly.

As Marjorie's comment shows, the women acknowledged the men's trade but felt their own work also involved special abilities. For example, as she finished taking a difficult call, Judy volunteered that telephone manner was an important aspect of the 'phone ad taker's job. Referring to remarks from the comp room, she went on,

> *Upstairs they think of us as the lowest of the low sometimes, but we're the people who deal with the public. We bring in the classified ads and that's what pays most of the bills.*

The following conversation with Deidre, a month after training commenced, illustrates once again the complex relationship between ideological assumptions based on gender, objective threats to the men's job opportunity and skills and their subjective perceptions of their status as male

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[1] See Chapter 8, p.134.

tradesmen. Speaking of one of the tradesmen, Deidre said

> *He keeps trying to put us down - expecting we'd make a mess of things [when we go on to the terminals]: Complaining about our punctuation ... Well, [she said in explanation] they see us taking over their work. Their work is diminishing and they see we can do it.*
>
> *Q: And they see their jobs are threatened?*
>
> *Deidre: It's not so much that he thinks his job's threatened, so much as his manhood's threatened. Seeing women do something they have always done in the past. They have lost their skills. Fancy having to go on something like paste-up. That's not much, just pasting stuff on a page.*

The extent to which gender is significant in understanding the tradesmen's attitudes towards the telephonist-typists is also illustrated in the following comment made to me by a VDT operator a year earlier. He was reflecting on the issue of direct-inputting under the new CMS system, and the threat it posed to the tradesmen's employment prospects, and he added:

> *But with due respect to women, if the women were to put them [classified ads] straight into the computer. '[He grinned with wry amusement.] Like car ads, it's laughable sometimes ...*

And he went on to illustrate some of the factual errors the ad takers made at times in recording details of car components with which they were not familiar.

During my participation in training, one of the men involved pointed out to 'our group' how important it was for us to get the style right, "otherwise they'll [the VDT operators] be saying: 'dumb broads'!" On another occasion, the system controller supervising training explained to me why he urged the women to pay attention to punctuation and abbreviations.

> *I really drill this because the guys have always said 'If the girls do the ads, style'll*[1] *go down the tube'.*

As was the case with the TTS situation described in Chatper 8, there was some material basis to the concern the men felt about the women's ability to typeset classified ads, and day-to-day experiences with the handling of ads before the change to CMS reinforced gender-based ideological assumptions. Under hot metal or the CM11 system, the men typeset the ads from hard copy produced by the women. As I have shown, the ad takers were required to work at speed and deal with customers who were not always clear about the wording and insertion details of their ads. Confusion also arose through misunderstandings during telephone communication. This led to more typing errors than would have been the case if the women worked as copy typists. In addition, the telephonist-typists knew the invoices were checked successively at the copy desk, during the typesetting by the printers and by proof readers before the ads appeared in the newspaper. This "back-up" meant that the women did not carry full responsibility for accuracy, nor for inserting punctuation marks into the ads.

Punctuation and style became a focal point for the men's complaints. The women who worked on 'phone ads had been trained as secretaries or typists, learning clerical and not printing style for punctuation. For example, they were used to inserting commas between numbers listed in raffle results, whereas when the material is typeset the

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[1] 'House' style.

numbers are tabulated in columns and no commas are needed. The following conversation illustrates the salience of the issue: At tea after the first group had commenced retraining,[1] I mentioned that I appreciated sitting with the ad takers as they worked downstairs on the 'phones. Wearing a head-set gave me the opportunity of learning about the range of calls which they handled. I commented:

> *I had an idea from the outside looking in that it [the job] was just taking ads, but I can see you need to do a variety of tasks.*

Marilyn: *Just you tell the printers that. They think we're just dumb bums. They're always telling us we know nothing, we make mistakes.*

Q: *How do you hear that?*

They spoke of icy stares when they went through the comp room on their way to the training room. Then Joy interjected:

> *Oh, it's got worse in the past few months since they knew about CMS. They're frightened we'll take over their jobs. I'll give you an example. I was querying a problem with them [in the comp room] and one said "Oh, you ['girls'] downstairs always stuff things up. [When you go onto CMS] you'll stuff up the whole paper."*

Marilyn: *<u>They</u> tell us you don't put two spaces after a full stop, and that you mustn't use abbreviations like "brm" [for 'bedroom' in real estate ads]. But they've never <u>told</u> us before [because the material was always re-keyboarded]. I learned to put <u>three</u> spaces after a full-stop and two after a colon.*

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[1] I was involved in the third training group.

As I show in the following section, the anger in this exchange[1] also reflects the tension generated during the early weeks of training when the women grappled simultaneously with their anxiety about the training, computer terminology and operation, industrial relations issues and domestic commitments.

(d) Undergoing Training

The 22 telephonist-typists, including the supervisor, trained over a two-month period in four groups.[2] The first group of six was allotted a three-week full-time course to enable computer personnel and the supervisor to "iron out" any problems that might arise when the system was actually implemented. The remaining groups had two weeks' training. Part-timers not involved in the current course "filled in on the 'phones" for those who were. Full-time workers returned to their typewriters and headphones for brief periods before and after their day-long instruction sessions. Once the essentials of computerised typesetting had been taught, training included periods "down on the 'phones". After completing the initial course, 'trainees' practised and extended their skills in 'real life' situations, drawing on the assistance of the more experienced of the retrained

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[1] Rejoinders from the women to the tradesmen like "You're nothing but a copy typist" exacerbated the situation.

[2] As indicated earlier, the system controller responsible for retraining the tradesmen also ran the courses for the telephonist-typists. He was assisted by the Production Manager and other computer personnel. Training sessions were held in a special room containing computer terminals on-line to the central computer. A detailed 63-page manual, produced by the manager of the computer room, was used in the training programme.

tele-ad operators, computer personnel and the Production Manager.

The telephonist-typists' response to the training period tended to follow a pattern in which initial excitement at the novelty of the new keyboard and screen was quickly replaced by reaction to the intense concentration required to master the system. Typically each training group experienced a period of several days' concentrated effort, some confusion and extreme fatigue as they were 'introduced to' the special function keypad on the terminal, the theory of basic typesetting and the new electronic form which replaced the paper invoice.

On the first day of training, Marjorie "got to lunchtime and didn't want to stop". Anne-Marie was equally positive, but added the cautionary comment: "Perhaps there's something in store for us that we don't realise". She was right. By afternoon tea, the new training group appeared in the 'caf' looking somewhat glazed. Anne-Marie sat down gratefully with her tea and muttered: "My head's going round and round".

Formerly the telephonist-typists processed information on paper, using a typewriter. With the CMS system, they process information by using a keyboard to interact with the computer, carrying out a series of 'electronic operations' which they cannot directly 'see' or 'feel'. Even the initial experience with the computer keyboard was perplexing. Compared with a typewriter for example, there is no 'carriage return' at the end of each line. Instead, the operator can type each line without pause until the screen is filled with

copy. In addition, the typing position on the screen is marked, not by physically aligning the paper with the line indicator, but by the cursor.

Most women had initial difficulty with a series of related procedures that enabled the tele-ad operator to clear ads from the screen and 'place' them in a 'HOLD queue' for subsequent retrieval and manipulation. When an operator wanted to take multiple ads from a customer she could 'fill in' - on the 'form' displayed on the screen - the insertion details and the customer's phone number, name and address, and then key in the text of the first ad. Operating the HOLD keys, she could 'place' a copy of this ad in the HOLD queue, clear the text from the screen and take down details of the second ad, changing run-dates or classification (if required) in the form which remained on the screen. Advertisements in the HOLD queue were retrieved after the customer terminated the call, corrections made and typesetting details completed before the ads were entered into the database. Other similar procedures, based on 'electronic queues', or files, enabled ads to be retrieved from the system, brought to the screen and changed or 'killed'. These initially proved equally baffling.

However, the women showed growing confidence with the system as the week wore on. They began working in pairs, setting ads from old invoices and simulating the voices and 'phone manner of regular customers. Typically, by the fourth day, most of the trainees expressed considerable enthusiasm for the new system and their work on the terminals. As Justine expressed it, she felt "quite chuffed" when the

programmed response of the computer consistently showed she had completed a series of HOLD operations correctly and successfully typeset a number of run-on ads.

This newly-won enthusiasm was somewhat dampened, however, when the tutor informed the group that he would be taking each person in turn down onto the 'phonesto test out their new skills. "If I get Mr. Hudson I'll freeze," was Pauline's immediate response - referring to one of the more difficult of the regular customers. The women's initial attempts on the 'phones were a series of trial and error. After her first experience on the terminals dealing with the customers, Jocelyn spoke for all of the women when she commented, "It's a totally different ball game". As June explained it later,

> *You heard their voice and the two somehow didn't go together. You were too busy concentrating on the terminal. With the typewriter somehow you felt in control, because you put in the invoice [PAUSE] you could see it, whereas with the terminal you knew that you could touch the wrong button and lose the lot.*

For some of the operators the early experience back on the 'phones was traumatic. Marilyn, in considerable distress in the cloakroom one day, recounted how she had just "lost" the entire text of a large double column ad. She had keyed in the wording of the ad until the text filled the entire screen - a situation she had not met before. In her uncertainty, she panicked. With the customer on the line she pressed "FCN NEXT PAGE"[1] and nothing happened. With mounting panic she pressed "FCN MAKE ROOM" and "lost it all".

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[1]Two keystrokes which commanded the computer to clear the text from the screen - and hence to 'turn to the next page'.

However, assisted by one of the more experienced operators and a patient customer, she retyped the entire billing details and text. This time she carried out the correct procedure and entered the ad into the system without further mishap.

Pauline found that "if you make a mistake it takes ages to work out where you've gone wrong", a fact which Justine confirmed when she discovered in her second week of training that three ads she took the previous Saturday had not appeared in the paper. "I'm absolutely baffled. It's blown my confidence sky high." Later, after trying unsuccessfully to track down her error she commented, "It's very disconcerting not knowing what I've done wrong".

Towards the end of the training period, the women were introduced to the concept of formats and the procedure for setting space ads. As the previous chapter showed, this involved learning to visualise from 'straight text' a spaced ad as it would appear in the final printed form; and, accordingly, learning to select the appropriate format and sequence of codes. This was a "humbling" experience for some of the women who found it more difficult than they had imagined to convert the wording of an ad typed on an old invoice form into a typographically pleasing style - using one of the 23 available formats. When Pauline commented, "That only took us an hour and a quarter" as the group completed their first trial, Deidre responded wryly, "I won't laugh at that guy who took three hours now".[1]

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[1] She was referring to the VDT operator who showed the women an 11 cms double column ad which had taken him three hours to typeset (see p. 325).

The telephonist-typists found that with direct-inputting accuracy was essential. Incorrect insertion details, which resulted when the wrong key was accidentally hit, could result in ads simply not appearing in the paper. In addition, with run-on ads and the formatted spaced ads, inaccuracies in wording, punctuation and style ended up in print. Moreover, if the coding details were not correctly keyed in, unusual typesetting styles resulted. For example, failure to key in a specific command after the initial highlighted word in run-on ads meant that the entire text was set in 'impact' or bold type. Moreover, with the direct-inputting procedure for billing, if certain details were omitted or were inaccurate, the customers would not be billed.

The women's early difficulties in grappling with unfamiliar computer concepts and terminology, and their adjustment to full-time learning in a classroom situation were exacerbated by a number of other factors. As discussed in the preceding section, comments from different printing tradesmen tended to undermine the women's confidence that they could successfully retrain. In addition, conflict arose between the telephonist-typists and management over the rate which the women were to be paid once they joined the Printing Union.[1] Conflict also arose over the rates of pay for part-time and full-time workers covered by the Printing Award. As clerical workers, part-time and full-time workers were paid at the same hourly rate, but in the

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[1]The issue related to payment at Award or above-Award (House) rates. The details are not relevant here.

Printing Union part-time workers received a 10 per cent loading. When this was discovered it caused friction among the women.

Since these different issues[1] generated a number of formal and informal meetings among members of the 'phone ad section, within the chapel, and between chapel delegates[2] and management, training sessions were sometimes interrupted. When feelings were "running high" on one occasion, Anne-Marie spoke for most of the women when she commented, "It's hard to concentrate [on the training]. Trying to learn all these new things with all this hassle." On another occasion three weeks later, Jean was worrying about the part she would be required to play in carrying out one strategy the women decided to pursue with management over the "Award versus House rates" issue. She confided, "It's making me feel really sick. It's worse than the training."

Furthermore, since the majority of women had domestic commitments, and many normally worked only part-time hours, they had to make special arrangements at home to cope with the increased hours which they all worked during the two month training period. On one occasion, I queried Joy about how her training was going and she replied that it had been "a terrible day yesterday - the accumulation of the week!" She recounted how, on each of the four previous days, some issue or another had erupted and on two occasions the

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[1]Conflict also arose when the chapel blocked the attempts of the management to include a clerical worker from the 'front office' in the retraining sessions. The chapel was able to do so by enforcing the provision in the Award which restricted computer operation to Printing Union members.

[2]Including two retraining telephonist-typists.

training had been disrupted by meetings. She went on,

> *Yesterday I couldn't face the idea of going home, getting involved in discussions about whose clothes were whose [her teenage daughters were off to a concert that night], remembering to buy bananas on the way home for their [her family's] lunches ...*

Typically, however, by the end of the two-week full-time training session and after one or two weeks on the 'phones, most of the newly-trained operators responded very favourably to their new jobs. In Heather's words, "It's quite rewarding doing the whole job right through from customer to paper. You feel as though you're a wee bit important." Many found the changeover to computer terminals and the retraining experience a welcome challenge and change - as was the case with the workers in other departments whose jobs were upgraded as a consequence of the move into cold-type production. Pauline, for example, commented in the cloakroom after three weeks with the CMS system that,

> *The training has given the job a new interest just at a point when it was getting routine and I'd been thinking of getting something else.*

(e) Objective Changes in Skill

Comparison of the women's jobs before and after the changeover showed that the work was reskilled in significant ways. With direct-inputting, the tele-ad operator no longer types the details of the ad in draft form for typesetting and proof-reading by printers and readers. The woman herself is responsible for the appearance and accuracy of most of the ads she takes over the 'phone. Therefore, her overall responsibility has increased significantly.

At the same time, the former telephonist-typist has acquired additional keyboard skills, an understanding of computer technology and the complexities of manipulating ads electronically within a copy-processing system. Although the use of formats leaves the tele-ad operator only a limited area of discretion in setting space ads, she has acquired an understanding of basic typography, including printing style and the art of visualising. These new printing skills are exercised while the operator is coping with a customer on the 'phone. This is an important skill since the women must concentrate on the steps required for correct typesetting, as well as dealing satisfactorily with the needs of the customers. Admittedly, the operator can put the ad into HOLD until the 'phone call is finished, but this operation has to be carried out in the context of a sequence of 'phone calls involving a range of customer requests. For this reason, the work of the tele-ad operator requires concentration and accuracy so that ads are not "lost" or incorrectly processed.

In the change to the CMS system, the telephonist-typists lost some of their former tasks. They no longer need to check the credit list or the ledgers account list. Since ads can be changed, repeated or cancelled electronically, they no longer need to move round the department checking paper invoice forms and back editions of the newspaper. The women's response to these changes and the re-skilling that has occurred is examined in the following section.

(f) Responses to the Job of Tele-ad Operator

During the first two months the women typically responded favourably to their new jobs as tele-ad operators. Their attitude reflected factors inherent in the work itself, together with the novelty of the retraining experience; the challenge and satisfaction of mastering a new set of skills and the increased attention which the 'phone ad section received from all levels of management and from employees in other departments.[1] For this reason, a return visit was made to The Star 12 months after the start of retraining to assess response to the new system once the work became routine.

Of the 22 women who underwent retraining, two full-timers left The Star during the intervening period - one to have a baby and the other to take up employment elsewhere. Of the 20 women remaining, 17 were unhesitant in their enthusiasm for their new jobs under CMS, two were equivocal and one preferred "the old typewriter". The 17 tele-ad operators preferred the new system because of its efficiency, their increased satisfaction in dealing with the customer and the increase in skill and responsibility. Although overwhelmingly in favour of the change, 10 of the 17 experienced eye-strain in their new jobs. In all, 12 of the 20 women volunteered negative comment on the effects of the work on their eyes.

All 20 tele-ad operators commented favourably on the efficiency of the CMS system. Mistakes were "very easy to

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[1]For a full discussion of the "Hawthorne Effect" see Rose, 1975:129-146.

change now", as Helen explained, since "you can just take the cursor back" and delete the character or word. This was an advantage when you got "those awkward customers who change things". Further, since ads entered into the data-base in the previous seven to ten days were retained in the system, they could be "retrieved" and brought back onto the screen in a matter of seconds using only a few keystrokes. When a customer 'phoned with a complaint about the ad, therefore, the operator could "immediately" check the original text and insertion details. Requests for alterations, repeats or cancellations were dealt with in a similar way, and the necessary changes were made by simply deleting the original run-date and inserting the new one - an operation which again required only a few keystrokes. Kim compared this with the previous procedure:

> *You don't have to get up, go down the back [where the newspapers are filed] cut the ad out of the paper, stick it on the form and send it up the belt.*
>
> *It's a matter of time, 'specially on a Friday when it's so busy.*
>
> *Now if a customer rings up one hour later to change an ad, you can just call it up. Before you had to go round to each of the girls and see who took it [to check the carbons on the metal spikes].*
>
> *With COMPLAINTS on Mondays particularly, you used to have to go through the stack of yellow copies and see what went wrong. Now you just call it up and see.*

The CMS system also allows the tele-ad operators to handle a number of ads from the same customer without having to retype billing and insertion details over and over again. The operators typically compared this favourably with the old method. As Heather explained it,

> *When the customer has a number of ads to insert you're able to put them into the HOLD queue. If there's no change of classification [or insertion date] there's no delay, because you just change the text.*
>
> *Before you were slipping invoices in and out of the typewriter and having to put in the details later.*

Kaye explained that

> *you could get 30 to 40 ads from the same person. One man rings each Friday with up to 40 ads. He's a very pleasant, patient man but everybody used to dread getting him on a Friday. You could be on the 'phone for an hour or more. [Once] he went overseas on a holiday for three months and we wanted to take up a collection to keep him away for another three months.*

As Heather suggests (above), under hot metal and the CM11 system the telephonist-typists were continually reaching up over their typewriter keyboard, inserting and removing invoice forms - one for each ad taken. They typically inserted and removed each invoice twice - once during the call and again after the call was terminated. Moreover, when the form was in the typewriter, the telephonist-typist continually moved the carriage back and forth to position it so the appropriate sections of the form could be typed in. This was physically demanding work, especially with the continuous stream of calls on Fridays. Nine of the women volunteered that compared with the old method, operating the terminal was much less tiring on their arms and shoulders. As Jean put it,

> *You haven't got that jolly carriage to push along. I've got a sore shoulder, so it makes such a difference to me.*

Furthermore, a computer terminal was "smooth to operate" and much less tiring - in Anne-Marie's words - than "when you're

thumping hell out of the typewriters, given their age".[1] Because of this (as several women commented with relief), their work was so much quieter, particularly on a Friday. Kim explained, "you [still] hear the 'talk noise', but not that clatter. Nineteen of us here some days."

The efficiency of the new system also meant that customer interaction was made easier. Since interaction with the customer was an important aspect of the women's jobs, anything which increased customer satisfaction added to their own. Customers did not have to wait on the end of the 'phone while the person taking the ad handled their queries or complaints and, as Marjorie suggested, "with the ad in front of us you can be a lot more informative [for the customer]". In addition, multiple ads could be processed more quickly than before, which pleased customers.

The proportion of 'complaint' calls had also dropped significantly since the introduction of CMS.[2] Several of the tele-ad operators spoke of this with pleasure. Margaret, commenting that the error-rate had "really gone down" added, "Mondays[3] the 'complaints' used to be horrific". Obviously the operators welcomed the decrease in calls from disgruntled customers. Another source of friction in their former job was the credit list. Several women admitted that since they disliked having to tell a customer (whose name appeared on the list) that they were unable to take his or her ad, they avoided checking through the list if they were pressed for

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[1] The typewriters were heavy manual machines.

[2] See the estimate of a 30 per cent reduction in errors; Chapter 9, footnote on p.276.

[3] Following the publication of Saturday's large classified ad section.

time. With the CMS system, the credit check was done automatically once the tele-ad operator entered billing details into the system and depressed the 'CREDIT CHECK' key.

Heather noted that an additional advantage of CMS for her was that "if you have an awful thought later [in the day] that you've left something important out [from the ad], it's possible to have another reassuring look". Before the changeover, the paper invoice would simply have "disappeared" into the system.

The third commonly cited set of explanations for preferring the new system was the increased skill and responsibility entailed. For example, Pauline said she felt as though she was "doing something a bit more specialised than just typing up invoices". Gwen said the new job involved "stimulation to your brain, whereas before you were plodding along on the old typewriter". Jean, in her fifties, enjoyed the challenge of mastering the new technology of computers. "Now I can understand if people are talking about them."

Kim and Anne Marie were among several tele-ad operators who referred specifically to "the challenge" of typesetting a space ad using formats - "getting it to fit where you want it to fit". "This way you've got to think about it." "Now you set it out, whereas before you could set it out on the typewriter, but it wouldn't end up like that" in the paper, because the tradesmen typeset the ad. As these comments suggest, many of the women found that the work was more satisfying because:

> *You're actually entering it right into the system. It makes you feel as if you're much more involved. [Before] anybody could do it. You were typing on a piece of paper and so many people were handling it. Whereas now it's your responsibility.*

Two of the women, however, disliked the increased responsibility and, in Denise's words, found that the work was "not as carefree as it used to be. I have to really concentrate." Marjorie also found that it was too easy to make mistakes, to overlook something "when you're under pressure, with the light flashing". With "no-one to catch your mistakes, you have to double-check everything". For example, she said, if your finger rested too long on a key the character registered twice. She had done this when typing the 'zone number' or code for the particular paper in which the ad was to run,[1] and had keyed in an ll instead of a 1. Since this was meaningless data for the computer, the ad failed to appear. June also spoke of the need to pay attention to detail, and laughed over an error that occurred in the previous week when an ad for 'BUSINESS SALE', Classification number 354 ended up in the 'KNITTING' column, 543. "At least they had a classification to themselves!" she grinned.

There were other drawbacks to the system. Although Justine liked the versatility of CMS she didn't "like its temperament at times - when it breaks down!" Then "it is a matter of going back to the old 'writing out in longhand', and the old hands are just not used to it". As she put it,

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[1]Different codes denoted the daily or weekend edition of The Star or its four "Community Newspapers".

"it's not infallible. So much for computers taking over!"

The most frequent negative comment about CMS, however, referred to eye discomfort.[1] Twelve of the 20 tele-ad operators volunteered comment about the effects on their eyes of working at a computer terminal.[2] They described a variety of symptoms which ranged from soreness, stinging, itching and bloodshot eyes, to strain. One operator regularly experienced headaches. Marjorie spoke of feeling "a tightening up of the muscles round the eyes". These symptoms typically occurred on the days when their hours were long and the work was continuous - particularly on Fridays. Several of the women noted that on the day following a long shift they felt physically "below par".

Only three of the twenty women worked full-time and the hours of the part-timers were spread over the week, typically in shifts of between four and a half and five hours, except for Fridays. On that day most worked for eight and a half hours or more, and several worked for between ten and a half and eleven and a half hours.

Helen's response was typical. Although she "wouldn't go back on the typewriter" she found the work was "hard on your eyes". On Fridays she worked between 8.30 a.m. and 6.30 p.m.

> *Sometimes my eyes would be very sore. When you go home they'd be just about out on stalks. You couldn't watch T.V. or anything. [On] other days, I only work half-days. That's better.*

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[1] For a discussion of available evidence, see Chapter 6, pp.184-186.

[2] Each had had their eyes tested before retraining commenced in accordance with an agreement between management and the Chapel.

Q: *How did you feel on Fridays before you changed to CMS?*

Helen: *I still felt tired, but not my eyes. They get sore and bloodshot, itchy, and you want to rub them a lot. You've just got to go to bed and sleep it off.*

Margaret, too, complained about her eyes. She had just come back from holidays and noticed that her eyes had once more become tired and red. "I think we're lucky being part-time, not staring at them [the terminals] all the time. You can go away in the afternoon and look at the sunshine and the garden." Despite her enthusiasm about the new job, Pauline found that since the changeover she regularly developed a "sick headache" on Saturdays after ten and a half hours' work the previous day.[1] Keen on sport, she commented ruefully,

> *It's a nuisance really because I'm really raring to go and it's awful when you have this 'head' hanging over you.*

Since the women move from their desks less frequently under the new system of processing ads, one might have expected this to affect their feelings of satisfaction with their jobs. However, only two women specifically mentioned that they disliked the reduction in movement. Admittedly, the opportunity for interacting with other workers still exists, since hard copy ('Cash Ads') has to be taken to the supervisor's desk and the women still carry out miscellaneous clerical tasks which involve them in moving about the office. The uneven work-flow which is characteristic of the work-day

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[1]Although eye-strain typically seemed to be associated with length of time on the terminal it was not invariably so.

in a newspaper office also gives the women periods of down-time and periodic welcome breaks from the system.[1]

6. Conclusion

This chapter provides a detailed ethnographic record of a number of departments in an organisation undergoing major technological and social change. It describes the two-year period of transition to the new CMS system, and shows how people perceived and experienced the change, and the impact this had on their behaviour. The chapter is not merely a record of change, however. By documenting the unfolding of the process, it also illustrates how ideas emerged from the fieldwork and led to a modification of the theory of the labour process. Four of the key ideas are of particular importance.

1) Computer technology has blurred the distinctions between what were formerly - under hot metal - separate areas of work, performed by different occupational groups. In the process, several have been collapsed into one - with consequent job loss. Natural attrition in the TTS room, combined with a policy of non-replacement of non-journeymen members of the Printing Union, reduced the TTS operators to a staff of only two. Clerical jobs associated with charging and billing customers for classified advertisements disappeared and workers were relocated, and the diminished workload in the readers' room has been met by natural attrition.

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[1] In addition, since the change, the women have asked for the 'delay light' to be "turned off" and this has reduced pressure on their jobs.

2) The telephonist-typists' experience in undergoing retraining on the computer terminals reflected several aspects of the reskilling process which were distinguished in Chapter 7.[1] For example, Pauline echoed the feelings of the charging clerk from the front office[2] and the tradesmen in the comp room[3] when she commented that the training gave the job "a new interest just at a point when it was getting routine". Similarly, the telephonist-typists underwent significant reskilling during the actual process of retraining. They acquired a range of keyboard and conceptual skills associated with a computer-based system of processing information. Like the keyboard operator from the cold type department[4] the women discovered that there was "a lot more thinking" involved, and, as one of them put it, felt "quite chuffed" when they found they could master the new job.

3) The evidence reviewed in this chapter shows that the structure of jobs and the organisation of work under the new CMS system reflected the process of struggle for control over the technology - described in the previous chapter. One consequence of the protracted struggle was the heightening of fears about job security among affected workers - significantly, among printing tradesmen.

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[1] Chapter 7, pp.225-226.

[2] p.315.

[3] Chapter 7, p.222.

[4] Chapter 7, p.223.

4) Observations over the period between August 1980 and April 1982 allowed me to document the way in which the new job of tele-ad operator was socially constructed out of everyday experiences in the workplace - as had been the case with the TTS operators (see Chapter 8).

Clearly, in practice, the processes discussed in 3) and 4) are interrelated, and, as this chapter and the previous chapter have shown, the events that occurred during the period leading up to the introduction of the CMS system at The Star reinforced the printers' subjective experience of deskilling. As a consequence, the men sought to retain their subjective perception of VDT work as more skilled than the work of the tele-ad operators.

At the same time, the nature and extent of the reskilling experienced by the telephonist-typists was crucially influenced by the strategies which the printers adopted to retain the objective skill differential between the two jobs. Chapel control (secured as a result of the Court ruling) meant that the printers could influence both the development of the CMS software and the training programme for the tele-ad operators - and hence try to resist the objective deskilling facilitated by the Printing Union's strategy over Clause 35:5.[1]

The tele-ad operators were permitted to acquire a limited set of typographical skills, but were required to refer the more complicated ads - which did not 'fit' the

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[1] As Chapter 9 showed, objective deskilling was made possible by the programmable nature of computer technology and the newly-won access to it by non-journeymen clerical workers. See pp.288-295.

standard formats - to the tradesmen for typesetting. If the outcome of the struggle over the CMS system had resulted in the adoption of a full system of formatting, the tradesmen's jobs and skills would have been substantially reduced. A similar result would have occurred if the printers had not prevented the women from setting 'hard copy' ads.

Notwithstanding the strategies pursued by the Printers' Chapel, the work of the former telephonist-typists was significantly upgraded as a result of the new labour process that emerged. The extent to which the reskilling was fully recognised by the women or acknowledged by the men was a function of the process by which the skill definitions were socially constructed from day-to-day experiences before, during and after the implementation of the CMS system. In turn, this was the outcome of efforts by the printing tradesmen to retain their subjective perception of VDT work as more skilled than the work of a retrained typist. As was the case with the TTS operation (see Chapter 8), these skill definitions reflected both gender-based ideological assumptions and objective competencies.[1] Relative to the tradesmen, the tele-ad operators were "just doing the formats", but relative to the other clerical workers the women were being retrained to do "printers' work".[2] Moreover, through joining the Printing Union, they received

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[1]For example, in comparison with their own experience in trying to set a space ad using a format, the women came to appreciate why a tradesman might take three hours to set an 11 cms. double column ad.

[2]See submissions to the Arbitration Court by the NPA and the Printing Union, pp.290-292.

higher wages than formerly when they were covered by the Clerical Award.

At the same time, the women's responses 12 months after retraining illustrated their recognition of the objective skill in their work - particularly their ability to interact with the customers while carrying out a range of computer operations, and the increased responsibility entailed in the direct-inputting of classified ads.[1]

In the light of the earlier analysis of subjective deskilling (Chapter 8), it is significant that despite the threat of job-loss there was no contest by the printing tradesmen for the women's jobs as retrained telephonist-typists. The wording in the provision inserted into the 1978 Award makes it clear that the struggle for control was only to achieve coverage of the workers involved,[2] and not - as in the case of the photo-engravers - to contest work whose lines of demarcation became blurred by the technology. The lack of interest amongst printing tradesmen in the job of the retrained telephonist-typists can be understood by examining Plate 18 which shows the women wearing headphones seated at rows of desks in an 'office environment'.[3]

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[1] Before "you were typing on a piece of paper and so many people were handling it. Whereas now it's your responsibility."

[2] See Appendix C, Clause 35:5.

[3] In the changeover to the new CMS system, the typewriters were replaced by VDTs, but the environment remained the same.

I have been discussing four key ideas which emerged from the fieldwork study of the transition to the CMS system. These ideas are taken up in the concluding chapter when I assess the implications of the empirical material - in this and previous chapters - for a theory of the labour process.

CHAPTER 11

CONCLUSIONS

1. Introduction

Braverman's deskilling thesis provided the initial theoretical framework for this analysis of technological and social change in the newspaper industry. At the same time, this in-depth study of one metropolitan newspaper has indicated the need to extend Braverman's theoretical analysis of the labour process. This chapter assesses the utility of the perspective in understanding changes in the labour process at The Star and evaluates the theoretical insights drawn from the empirical study. I will argue that the research findings suggest that Braverman's theoretical framework has utility, but that its utility is limited by fundamental conceptual and methodological problems. For this reason, an alternative analytic strategy needs to be developed to make sense of the empirical material.

Braverman has argued that a general and progressive deskilling of jobs results from the attempts of employers to use technology and the principles of scientific management to wrest control from workers. Braverman has a "task-centred notion of skill" (Wood, 1982:15) which he conflates with control, and his analysis of the labour process is confined to the point of production. This limitation has four conceptual consequences. Firstly, his notion of control is linked to the individual worker, and hence the deskilling that

accompanies technological transformation entails loss of individual control over work tasks. As a consequence, collective control is ruled out as a factor in the process - a form of control which the empirical material shows was crucial to the outcome of the transformation at The Star. Secondly, Braverman does not distinguish between the deskilling of the job and the deskilling of the worker, and although clearly the two are related, the distinction has important conceptual and empirical implications. Thirdly, Braverman conflates the motive to deskill with deskilling as an outcome, but as the study shows there is no necessary connection between the two. Fourthly, in linking control to technical skill, Braverman focuses only on objective skill changes and neglects the role of subjective perceptions of deskilling in shaping the labour process. As the empirical findings indicate, these perceptions affect how people act collectively - which, in turn, influences the way work is restructured.

Braverman's analysis is conducted at such an abstract level that his theory cannot take account of these distinctions, and as a result it over-simplifies the process of technological transformation. This case study of a particular workplace facilitates a more sophisticated understanding of the complexity of this process, since it analyses a concrete historical situation.

Further over-simplification arises in Braverman's analysis of job loss. He argues that increased mechanisation divests workers of control not only by deskilling their jobs, but also by making some jobs obsolete as automation replaces

human skills altogether. However - as the study demonstrates - unemployment is not a simple and automatic consequence of technological change. Again, since the Braverman framework focuses on loss of individual control, it cannot allow for the collective strategies which may be adopted to resist redundancy.

In the light of these problems with Braverman's thesis a relational analysis was used to analyse technological change in the newspaper industry. This allows the researcher to take account of the different senses in which the concepts of control and skill can be employed, and to analyse their implications - both conceptually and empirically - for a study of new technology in the workplace.

The critique of Braverman developed in the present thesis relates to a particular case study. Some general insights may be drawn from the analysis; others are particular to the newspaper industry in New Zealand at a concrete, historical period. Hence, the chapter concludes by examining the utility of the thesis for further studies of technological change in the workplace.

2. Control

I turn now to explore the significance of the empirical material for an analysis of the concept of control. The need to make a conceptual distinction between individual and collective control is illustrated by examining the implications - for the printers - of the move into cold-type production. Individual printing tradesmen lost control (discretion) over part of their former work as a consequence of the objective deskilling entailed in the formatting of

some classified ads, and because the work is now being performed by another occupational group (the former telephonist-typists). The deskilling occurred because, as Braverman's thesis suggests, the tradesmen's typographical skills were embodied in the design of the software for the CMS system. Similarly, the design of the cold-type technique of photocomposition incorporated significant aspects of the compositors' former skills - and hence deskilled the compositors' job.

In both these cases, however, the printers retained collective control over the typesetting technology as the outcome of the process of struggle described in the thesis. In the first instance, the Printing Union used Clause 35:5 to bring the telephonist-typists into the union as non-journeymen members. In addition, The Star Printers' Chapel prevented the full implications of wholesale formatting through the collective strategies which it pursued. In the second instance, the chapel used Clause 25 of the Award to block the TTS operators from retraining on the VDTs. As a consequence, although failing to prevent the introduction of the phototypesetting equipment which deskilled the compositors' job, the chapel used its collective bargaining strength to ensure that the compositor himself was not deskilled, but trained instead on the VDTs.

As this shows, the collective strategies which are adopted will sometimes enhance individual control, as was the case with Clause 25 which prevents non-printing tradesmen from retraining for the new computer equipment. However, sometimes these collective strategies run counter to the

interests of individual control. This was the case with the Printing Unions' strategy over Clause 35:5 which facilitated the deskilling of tradesmen through formatting.

As the empirical study indicated, the degree of collective control exerted by the printers is fragile and may not persist. There are two reasons for this. The first relates to the shifting patterns of relations among contending groups in the struggle for control, and the second relates to the nature of the technology itself. Firstly, in the case of the direct-inputting of classified ads, employers allied with the printers; and in the struggle over the direct-inputting of editorial material, printers and journalists allied together in conflict with employers. However, as the study shows, these patterns of conflict and alliance are likely to shift as interests change and groups realign.

The second reason relates to the particular nature of computer technology, irrespective of, or in interaction with, the perceived interests of employers. New Zealand newspaper employers did not consciously introduce new technology with the aim of reducing printers' control over production. Whether employers intend this to be a consequence or not, and regardless of the collective strategies of the Printing Union, the nature of the technology is likely to result in greater use of female labour in typesetting work. As the study indicates women are seen to possess the appropriate skills for work on computer terminals and are a more 'flexible' and cheaper source of labour. Moreover, women are more likely to select themselves into work which is, in some ways, coming to be defined as 'women's work'. At the same time,

men are less likely to see the printing trade as 'men's work'.

Up to the present, the Printing Union has been able to retain collective control over the typesetting technology, but what will be its bargaining strength if it ceases to be a union with a majority of male members who possess scarce and valued skills? Is it likely to be the case that - as the printing tradesmen fear - women will further dilute the strength of the union because they "run to water" and are a manipulable category of workers? Or is it likely that the women will ally with other (male) workers in the union, as occurred when the tele-ad operators at The Star - now Printing Union members - were in conflict with management over their new rate of pay?

As this example shows, particular strategies which a group adopts to pursue its interests in a particular struggle over new technology may have unintended consequences. A further example is the struggle between the Printing Union and the Photo-Engravers' Union over membership coverage of the new automated plate-making process. The immediate resolution of the conflict appeared to favour the interests of the Printing Union, both nationally and in-house. At The Star, the stereotypers achieved their objective in receiving substantial redundancy payments. However, in the long-term, an important area of collective control has passed to the photo-engravers. Under hot metal, the work carried out by the photo-engravers was not crucial to daily production of the newspaper. Under the new automated system, however, the retrained photo-engravers produce the printing plates,

a key stage in cold-type production. Hence, they occupy a strategic point in production - given the nature of the product market and the vulnerability of employers to competition for advertising and circulation revenue. As a consequence, although individual photo-engravers have been deskilled, their collective control over plate-making makes them more powerful than before.

The empirical examples examined in this section have implications for a theoretical position which conflates control and skill - implications which are explored in the concluding sections of the chapter.

3. Skill

In the preceding section I have explored the interrelationship between the concepts of control and skill and illustrated some of the conceptual problems in Braverman's framework. However, the theory is limited not merely because it conflates the two concepts, but also because Braverman's analysis of changes in the labour process relies exclusively on an objective notion of skill. As the empirical study demonstrates, decisions about new technology in the newspaper industry were also influenced by subjective perceptions about the organisation of the labour process - particularly with respect to skill. Significantly, these perceptions about skill influenced the strategies adopted in the struggle over the new technology, and hence also shaped the structure of jobs which emerged when The Star changed over to cold-type

production.[1] Crucial to these subjective perceptions were ideological assumptions based on gender which mediated between the technological conditions of work and the collective response to the technology.

The development of the labour process associated with computer-based typesetting at The Star illustrates how the perceptions which workers hold (individually or collectively) affect the strategies they adopt - and how these strategies have implications for their own and other workers' jobs and skills. For example, the Printers' Chapel at The Star avoided total identification of the VDT operators' job with 'women's work' in the following way. The chapel:

1) used Clause 25 of the Award to ensure that no TTS operators were retrained and that the terminal room remained wholly 'male';

2) gained management agreement not to replace, with a trained typist, any TTS operator who left; and

3) gained management agreement to retrain comps on terminals.

This had consequences for the employment opportunities and skills of both the TTS operators and the comps. Similarly, the job structure of the retrained telephonist-typists was shaped by the struggle of printing tradesmen to resist the subjective deskilling which they experienced as a consequence of the Printing Union's strategy over Clause 35:5. At the same time it was an outcome of the events surrounding the Arbitration Court hearing and ruling - in which, as I

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[1] See Phillips and Taylor (1978:5) who also point out that job definitions are "as much part of the contemporary reality of capitalist production as the jobs they refer to".

have shown, the work of the retrained telephonist-typist was described, and legally defined, as 'printers' work'.

It is important to stress that subjective perceptions related to deskilling provide only a partial explanation for the strategies which were pursued in each of these two cases. The Printing Union and Star Chapel were also crucially concerned over the objective or technical deskilling and job loss[1] which were facilitated by the technology. Hence they sought to ensure that the comps - whose jobs had been partially replaced by the technique of photocomposition - were retrained on the VDTs. In addition, they sought to prevent the adoption of a system of formatting all classified ads. As this example demonstrates, the relationship between objective and subjective deskilling is complex. However, on the basis of the empirical study, it is useful to make the following distinctions between different definitions of skill:

1) Objective definition: The knowledge and competencies required to carry out a particular task (Braverman's task-centred notion).

2) Subjective definition:

(a) Collective. The common understandings which groups of workers bring to their job. These understandings reflect intrinsic job content, gender-based (or other) ideological assumptions, the collective bargaining process and everyday experience in the workplace.

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[1]The issue of job loss is taken up in Section 5 of this chapter.

(b) Individual. The ways in which particular individuals subjectively perceive their job as 'skilled', 'deskilled' or 'reskilled' - perceptions which will be influenced by the other definitions of skill.

3) Legal definition. Definitions of skill embodied in industry Awards, and the Arbitration Court ruling, which are the outcome of objective and subjective definitions and relations between groups of workers in the newspaper industry.

4. Job Destruction

The concepts of control and skill are central to Braverman's analysis of the labour process. A minor theme in his analysis, but clearly of great importance in the current debate about the implications of new technology, is the question of job destruction. Braverman argues that technology - in transforming production - divests workers of their craft skills, and in some cases destroys their jobs completely.

The study provides an empirical illustration of the employment consequences of the introduction of a computer-based system of production. Firstly, jobs were lost, but the process was more complex than that suggested by Braverman. Compared with the experience of overseas newspapers, relatively few redundancies occurred at The Star. When jobs disappeared as computer-based methods replaced manual ones, workers were typically retrained or relocated.

The study shows that employers sought savings in wage costs from the introduction of the new technology, but were constrained in their use of redundancy as a strategy by 1) the perishable nature of news as a commodity, 2) competition within the industry, and 3) a desire to prevent disruptions

similar to those that occurred in the United States and in Europe.

The costs to newspaper employers of redundancy arise in several ways:

1) directly in the amount which has to be paid out to employees who are made redundant (as laid down in the Award); and

2) indirectly in newspaper editions lost if strike action is adopted to resist job redundancies, or to secure favourable terms for redundancy. Such losses in production result in lost advertising revenue for the period of non-publication; and loss of 'goodwill' which potentially affects future circulation and advertising revenue.

With the exception of the case of the stereotypers and lino-mechanics who took voluntary redundancy, a policy of natural attrition was used instead of redundancy to reduce staff levels. This suggested that involuntary job loss is not an immediate consequence of technological innovation as Braverman suggests. However, while the strategy of natural attrition defused labour resistance, job loss nevertheless occurred.

For example, the Father of the Printers' Chapel calculated that, of the staff in departments affected by new technology and covered by the Printing Union, the number dropped from 126 in 1975 to 95 in 1980. This represented a drop of 24 per cent. Between December 1980 and December 1982 there was a further 11 per cent decrease.[1] The

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[1]This figure has been calculated - on the same basis - using the number of staff listed in the Chapel's Christmas card printed for each of the respective years. The tele-ad operators, formerly members of the Clerical Workers' Union, have not been included in this calculation.

reduction in the number of staff employed cannot be automatically attributed to new technology, since natural attrition would be relied on by management to reduce staff during any period when advertising sales were depressed as a consequence of national economic recession. Nevertheless the figures are suggestive.[1]

5. External Influences

As the previous sections show, for Braverman the point of production is the key to the issue of control over the labour process. The present thesis demonstrates that it is necessary to go beyond this conception of control - and the notion of skill which it embodies - to understand the impact of new technology.[2] This study shows that decisions about new technology in the newspaper industry were influenced as much by external factors as by developments on the shop-floor. Firstly, if one accepts the analysis of overseas writers,[3] the new cold-type technology adopted by New Zealand newspaper employers embodied certain control implications which reflected the United States' labour relations scene. Hence, employers in this country were themselves constrained in the extent to which they had control over the technology. At the same time, the unavailability of the hot-metal equipment influenced their decision to use the new technology.

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[1] National Secretary of the Printing Union, C. Chiles, noted that the numbers of production staff in New Zealand newspapers had dropped by at least 40 per cent as a consequence of the introduction of new technology (New Zealand Times, March 7, 1982).

[2] Other writers in the field also argue that a theory of the labour process cannot be restricted to a study of work activities at the point of production. See for example, Littler and Salaman, 1982:266.

[3] See Zimbalist (1979) and Cockburn (1983).

Secondly, the nature of the product market and the degree of competition experienced within the newspaper industry influenced both the decision to implement the technology and the manner of its introduction. As the study indicates, declining revenue through increased competition led to a desire to cut wage costs, and the vulnerability of employers to strike action shaped the strategies which they adopted in implementing the new technology.

Thirdly, decisions about the technology were influenced by the outcome of interaction between the employer organisation (the NPA) and employee organisations (representing the printers, journalists, photo-engravers and clerical workers) and the state (in the form of the Industrial Commission and the Arbitration Court).

In summary, the findings from the study show that a theory of the labour process needs to take account of a number of interrelated factors:

1) the constraints of the technology itself,
2) employers' motives or interests,
3) competition between workers,
4) ideological assumptions which mediate between the technical conditions of work and the response to the new technology,
5) the nature of the product market, including the extent of competition between employers, and
6) the role of the state.

The outcome of the interrelationship of all these factors shapes the structure of jobs - the nature and level of skill which they embody, their stability or instability, and who is to be employed and who unemployed. The capital

accumulation process sets the context for, but does not determine, the struggle over the labour process, and the "contested terrain" (Edwards, 1979) of the workplace reflects more than merely the struggle for control by the particular employer and employee. It also reflects external market factors and the dynamics of the labour market.

6. Conclusion

It is now appropriate to reflect on the implications of this empirical study for explanations of technological change in the workplace. The study was informed by a Marxist analysis of the labour process - and in particular, by the contribution which Braverman has made to studies of the workplace. It has been moulded around issues of 'control' and 'skill' which are central to Braverman's deskilling thesis, and the core assumptions and research questions which initially guided the research stemmed from his analysis. As the research findings show, an understanding of the impact of new technology in the workplace requires an understanding of the process of capital accumulation and the social relationships which this process embodies.

However, these findings also show that the issues of control and skill are more complex than Braverman suggests, since the job structure which emerged at The Star following the changeover to cold-type production was the outcome of a process of interaction among informal and formal groups and organisations. Moreover, both within, and outside, the newspaper industry, the activities of any one group could only be understood in relation to those of other groups

involved in the struggle over the technology. For these reasons, a relational approach was used to study the changes in the labour process at The Star. As the findings show, a relational analysis of technological transformation allows the researcher to incorporate the variety of economic, political and ideological factors which restructured the labour process - and, hence, to better understand the changes in the content of jobs and in employment opportunities. Accordingly, this approach allows the researcher to avoid the technological determinism of earlier studies of the work-place and the equally deterministic approach taken by Braverman.

Moreover, this method of analysis enables the researcher to take account of the subjective components of technological change. This is important not just because of the interest which sociologists have traditionally shown in the subjective experience of changes in technology, but, crucially, because of the effects of that experience on the strategies which different groups will adopt - and hence on the strategies which shape the organisation of the workplace and the structure of jobs.[1] However, in order to understand the influence of subjective perceptions, the researcher needs a methodological approach which moves away from the abstract towards concrete historical studies.

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[1] Burawoy (1978:268) also notes that "the capitalist mode of production is not just the production of things but simultaneously the production of social relations and also the production of ideas about those relations".

A focus on both the subjective and objective dimensions of the labour process and on issues related to the social construction of skill also provides a way of analysing the complex and contradictory relationship between gender and class in studies of the labour process. As the research findings show, transformations in the labour process can reflect and entail changes in the sexual division of labour, and have consequences for the construction and reconstruction of definitions of masculinity and feminity.[1]

In showing that the perceptions of actors are not merely determined by materialist factors associated with the organisation of work, but also by their definitions of the situation, the findings from the study echo the concerns of industrial sociology of the late 1960s.[2] However, the present study is concerned with the impact of subjective perceptions on collective strategies of response to technology, rather than with the individual worker's response.

The theoretical insights provided by the critique of Braverman - which I have developed in this thesis - suggest that in a study of the introduction of new technology into the workplace, the salient factors include the nature of the product, the extent of competition within the industry, conflict between employer and worker, hierarchies within

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[1] See also Cockburn (1983:140) who notes that transformations in technology have a "disordering and restructuring effect within the hierarchies of patriarchy as well as those of class. It threatens with illogicality the meanings we are used to making of our experience; it demands reassessments." Similarly, see Phillips and Taylor, 1980: Game, 1981; and Game and Pringle, 1983.

[2] See, for example, Goldthorpe et al., cited in Hill, 1981:118.

the labour market and the particular society and historical period. My critique of labour process theory is linked to a particular industry with particular characteristics. The perishable nature of news as a commodity, for example, played a crucial role. The technology was developed in the United States and implemented in New Zealand newspaper offices against the background of industrial confrontation in America and Europe. The collective bargaining over the new technology was played out in the context of industrial relations legislation particular to this country, and to a particular historical period. Gender proved to be salient as a factor in the development of the labour market hierarchy within this particular industry. For these reasons there are limits to the extent to which it is possible to generalize about the social impact of new technology on the basis of this case study. Nevertheless, the study does illustrate the complexity of the factors involved in the labour process, and it is likely that other studies, in their different ways, would confirm this complexity.

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Printing Trades Journal

The Star

APPENDIX A

A micro-processor is one of a wide range of digital devices, devices which have two states typically signified by the representation 1/0.[1] A single 1/0 cell is called a 'bit'. Such a cell could be implemented by the appropriate inter-connection of two transistors. Conditions within a system can be represented by an array of devices, each having a 1 or 0 state.

The micro-processor is a special member of the family of digital devices since it is programmable. This means that it uses "bit" patterns not only to represent numbers or letters, but also to tell the micro-processor itself how to function. By defining a few basic functions, it is possible to synthesise all the apparently complex functions that are performed by a computer.

The CPU, or central processor unit, is the nerve centre of a computer. It co-ordinates and controls the functions of all other units, and performs manipulations on data. When the essential features of the CPU are fabricated on a single chip then the result is described as a micro-processor. The micro-processor must be supported by additional silicon chips in the form of memory and power-amplifying chips - devices which "inter-

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[1] This technical Appendix draws heavily on an article by Kennedy, 1980; on information provided by Dr. R.M. Hodgson, of the Department of Electrical and Electronics Engineering, University of Canterbury, Christchurch; and by the systems analyst/programmer at The Star during the period of the research.

face" it to the real world of printers, typewriters, electric motors, etc., and supplies of direct current. The combination of all these devices is known as the micro-computer.

Hardware is the term used to describe all the physical equipment associated with computer operation. Before the computer can be usefully employed, it needs to be told in a step-by-step fashion what operations to perform. The sequence of fundamental operations is defined by the software or program.

The program is generally referred to as software because, while it resides in hardware, it does not exist in its own right as a physical entity such as wires or components. It is merely an organised collection of bits, or a pattern of electronic charges. This pattern or program can be changed by a process very much simpler than changing thousands of wires.

A computer system for copy processing, such as that used at The Star, comprises two parts:

1) hardware and an operating system which enables the computer to perform a number of data functions:
   - i) input from a number of computer terminals;
   - ii) creating files on disk (that is, storing information in digital form in its memory);
   - iii) output to terminals, printers and photosetters; and
   - iv) sharing resources between different users when more than one terminal is in use.

2) software - the particular set of programs which interact with the operating system and are referred to as the 'applications programs'.

APPENDIX B

PART ONE METHODOLOGY

This methodological appendix is divided into two parts. The first describes the research process itself, while the second part is a copy of the research proposal which I negotiated with the management at The Star.

1. The Development of the Research Problem

As Chapter 1 shows, the debate over the effects of 'new technology' on New Zealand's economy and society gave impetus to the present study at a time when Braverman's deskilling thesis was shaping the direction of theoretical and empirical work in industrial sociology. When I began fieldwork in 1980, criticism focused primarily on Braverman's objectivist conceptualisation of the working-class, and hence upon his failure to examine the nature of working-class resistance to new technology. As a response both to the public and theoretical debate over new technology, the questions which guided the research centred around the empirical and theoretical issues of technological unemployment, control and skill. This led to an interest in the process of decision-making about various new computer-based production techniques: who had control over this process, and why. The questions also led to a consideration of the subjective experience of profound technological and social change. For these reasons, fieldwork was chosen as an

appropriate research method for the study.

The Star was one of a number of work environments which I visited in search of a case study of an organisation about to undergo, or undergoing, major computer-based technological change. At the same time, these early visits were intended to gain familiarity with the range of applications of new technology. Hence my initial contact with the newspaper, in August 1980, was tentative and I requested permission from the management for access only to gain some basic understanding of the technical changes. The Production Manager was the key to the initial access, and he subsequently became a crucial person in the study.

2. Access to The Star

Between August and October, I visited The Star eight times for several hours at a time, and was permitted to speak to people in the composing room, computer room, photo-engraving department, the rotary department and the editorial section.

In August I had also made contact with the Father of the Chapel of each of the three unions represented in-house: the Printing, Photo-Engravers' and Journalists' Unions. From each I sought and gained approval both for the initial access and, subsequently, for the study itself. By the end of October it was clear that, for both theoretical and methodological reasons, The Star seemed likely to prove an ideal organisation for the case study. I requested a meeting with the General Manager to discuss the proposed research programme, and agreement to proceed with the study was reached.

Formally, I requested a period of five to six months of fieldwork at The Star. Until Christmas 1980, access was strictly regulated, and I was required to contact the Production Manager before I went into the building on each occasion. By that date I had convinced him that it would be easier for him and for me if I could come and go without the prior arrangement, provided that I understood that I could be asked to leave any department at any stage. Thus I spent on average two to three days a week in the field for several months at a time, free to move from department to department without question although I always requested permission from the person in charge before entering. Periodically I withdrew from the field for several weeks at a time, to review the field data, and as a response to the stresses of fieldwork - discussed below.

In total, the fieldwork extended over a period of nearly two years. Since The Star had already changed over to cold-type production, I was unable to do a 'before, during and after' study. Nevertheless, I was able to document the changes through interviews and extended conversations. In addition, I made visits to other newspaper offices and made contact with national union representatives (discussed below). Fortuitously, the protracted demarcation dispute[1] between the printers and the clerical workers - referred to in Chapters 9 and 10 - justified my remaining in the field

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[1]The dispute 'surfaced' in January 1980 and was not resolved until the Court ruling in December 1981. The Star did not implement the CMS system until March-June, 1982.

for this length of time since I was studying the changeover to the CMS (Classified Management) System at The Star, and the system could not be implemented until the dispute was resolved. The significance of this for the development and critique of the theory of the labour process is discussed in the concluding section of this Appendix.

The analysis in the thesis also draws on observations, interviews and conversations in the weeks immediately prior to, and after, the start of retraining for the new system. This included a two-week participant-observation study with a group of telephonist-typists undergoing retraining on computer terminals[1], and two weeks' fieldwork one year after the CMS system was introduced. During observations of the telephonist-typists' work while interacting with the customers, I wore a second set of head-phones and sat beside the woman concerned as she took 'phone calls.

3. The Fieldwork Experience

At the outset of the fieldwork, the basis of the relationship between 'researcher' and 'researched' was made explicit. For example, I indicated to each person[2] that:

1) I was doing a study of the changeover from hot metal to cold type and wanted to understand how jobs had changed as a consequence.

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[1] See Chapter 10.

[2] These points were made clear in the course of our conversations.

2) I made quite clear to everyone that I would respect their confidences; and I stressed the need for objectivity. To employees I pointed out that I was not doing the study "for management"; to chapel representatives, that I was not going to discuss with management the things which they said or which I observed; and to management personnel I emphasised that my discussions with them would not be revealed to chapel representatives, or to anyone else.

3) I answered all the questions they had for me about the details of why I was doing the research, and what would happen to the material I gathered, and I told them that on its completion a copy of the thesis would be made available to management and to each of the chapels represented.

Slowly as the weeks and months went by I moved from my initial and valuable contacts with the Production Manager, the Father of the Printers' Chapel, and a number of other key informants in the rotary department, the photo-engraving department, among the sub-editors, and in the reading room. In this way I built up a network of relationships within and between departments at different levels of the formal hierarchy within The Star.

People began to treat me in ways that showed I had gained acceptance. For example on one occasion I was nearly paid. The new wages clerk had seen me in 'the caf' on a number of occasions. He came into the room one afternoon. I was sitting at 'my desk' writing up some field notes. He was holding a drawer of pay envelopes with names he could not identify. He came over to my desk and asked "which one are you?" The ensuing laughter from the Production Manager

and one of the compositors in the room drowned my sad comment that "I would like to take one, but I don't really think I ought to!"

I for my part behaved, as Dalton (1964:65) puts it rather formally, by giving "every legitimate service and possible courtesy". For example, the Editor's daughter was about to begin university studies but through ill-health missed out on the school's familiarisation tour round campus. Since she was nervous about attending university, the Editor asked if I minded showing his daughter round and talking with her about subjects like notetaking in lectures, and so on. This I did.

Actions such as these towards me, and by me towards others, were both cause and consequence of loyalties, trust and sympathy which develop when you fulfil the role of 'fieldworker as friend' as Bell (1977:59) has termed it. However, in the role of fieldworker as stranger, you are consciously monitoring this process in a way which you experience as abnormal to that friendship relation.

The following example drawn from Chapter 7 of the thesis (pp.209-210) illustrates the way in which field data was obtained and used to develop the theoretical analysis - an example, however, which suggests the inherent conflict in the participant observer role. The conversation from which the data is drawn occurred in the 'caf' early in 1981. I had gone in for afternoon tea and sat down with the newspaper at a table next to seven or eight comps. A conversation arose spontaneously from a series of questions put to me about the research - what I was studying, and "how long the book

[would] end up". As we talked, I asked them how they felt their jobs had changed since the move into cold type. As the conversation shows (p.210), the compositors' responses are particularly revealing about their perceptions of both the objective and subjective deskilling of the printing trade.

The same conversation provided further data for the analysis of the social construction of skill, and this is illustrated in the comment by Des, the compositor who referred to the VDT operators "being in the terminal room like a bunch of girls" (Chapter 8, p.256).

The conversation had developed in the context of a friendly exchange over afternoon tea, but my fieldnotes of the incident also note the following observation:

> *During the ten-minute exchange, no notes were taken, but as soon as the men left the table I went straight back to my desk and committed the conversation to paper. The data are valuable because the conversation flowed naturally, and my part in it was minimal except that the original questioning about what I was studying prompted discussion about their experiences of the changes in their jobs.*

As I have suggested, the agreement I drew up when I started the fieldwork set out the conditions under which I could come into the building, and when I should go into particular departments. But it did not spell out the actual research procedure in practice. Moreover, I did not negotiate a formal agreement with individual employees but negotiated their acceptance of the rules of the research relationship as I went. At best, their initial understanding of a sociologist was, typically, that of survey researcher. And - as Janes points out - in the standard survey interview,

> *the respondent consciously adjusts to the stimuli offered by the interviewer as a person known to be seeking information in his occupational role. In participant observation respondents adjust to the community role of the investigator unaware of the fact that their behaviour is being treated as information. (1969:52)*

Over time, in the process of shaping my own role at The Star, I tried to socialise those in the study into their role as informants and respondents. In practice this meant that people saw me a) sitting, watching the work process in particular departments; b) note-taking; c) chatting with people informally; d) asking questions, showing a marked and continuing interest in different technologies, and so on. And, indirectly, they gained some information and insights into what I was doing with the research material, because, as the fieldwork progressed, I sought feedback from them on propositions I was developing. What they could not gain however, was an insight into the particular techniques of participant observation by which I objectified my relationship with them.

The conflict this caused in me was best described by Goldner (1967:264) in his article "Role Emergence and the Ethics of Ambiguity". He writes that "the incumbent of an emergent role is constantly forced to take ethical positions in the face of ambiguity...", and he asks the question "How does one determine what is proper or improper when involved in undefined situations?" (ibid:265). Hence, during the fieldwork I was often confronted with the dilemma[1] that

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[1] I also grappled with the knowledge that the thesis would one day be finished, and some of the people I was working with at The Star would probably read it. Would they come to feel like a citizen of 'Plainville' who remarked that it "hurts to see things carefully laid out" in print? (Barnes, 1979:138).

> *if personal sympathy with an informant is necessary to elicit honest information, by the same token that information becomes a form of affectionate response and its subsequent use in an "objective" - i.e. depersonalized-context can constitute a kind of emotional betrayal. (Sjoberg, 1967:18)*

Undertaking the research in a complex organisation both exacerbated, and yet also helped to resolve, some of the strains resulting from the method. It was obvious that I was entering a situation in which conflict was institutionalised. In addition, I found during the study that there was major conflict among occupational groups differentially affected by technological change, and that this conflict was frequently based on gender. But the existence of institutionalised forms of conflict frequently helped me to demonstrate symbolically, and therefore to underline, the 'detached observer' role. For example, I attended the week-long hearing - in both Christchurch and Wellington - of the Arbitration Court into the demarcation dispute between the Printers' and the Clerical Workers' Unions (discussed in Chapter 9). Representatives of both unions were of course present, as were representatives from the Newspaper Publishers' Association and the Journalists' Union, and senior executives from several metropolitan newspapers. Each day I made a deliberate point of sitting several seats away from anyone, and, during adjournments, sought out different groups so that I did not remain with one group for too long. On one of those days, someone remarked to me that doing a study of the newspaper industry in "the current situation" was like "walking on eggshells". My retort was designed to emphasise the nature of the observer role.

"And what with walking on eggshells and sitting on the fence at the same time it can get very uncomfortable".

6. Interplay between the Method, Field Situation and Theory

This description of the fieldwork in practice has illustrated the interplay between the field situation, the fieldwork method and the development of the theory. For example, the unanticipated delays in the introduction of the new system of processing classified advertisements legitimated my continuing access to The Star well beyond the period originally negotiated. This had the consequence of overcoming some of the limitations entailed in an analysis of the labour process which is restricted to the 'point of production', and provided the key to an understanding of the role of external factors in shaping the structure of the labour process (see Chapter 4). At the same time, developments over the issue gave me valuable theoretical insights into the nature of the relationships of conflict and alliance among key groups within the newspaper industry - both in the workplace and nationally (see Chapter 5). The Arbitration Court hearings also provided cross-validation of field data obtained from The Star - particularly of data related to the issue of gender and the social construction of skill (see Chapters 5, 8 and 9). Furthermore, the experience of fieldwork during the protracted period of uncertainty among staff at The Star over the changeover to the new system[1] - together with the heightening of conflict

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[1] Discussed in Chapter 10.

over the issue of demarcation - had consequences for the way in which I experienced the inherent structural strain in the method of participant observation.

PART TWO

RESEARCH PROPOSAL SUBMITTED

TO THE MANAGEMENT OF THE STAR

Transition to Micro-Technology: A Case Study

The proposed research constitutes an intensive study of a work setting in order to analyse the process of technological change from a sociological point of view. It would trace the changeover from the letter-press method to the di-litho method of printing The Star based on computerised typesetting and photocomposition. This would entail detailed analysis of the process of initiation, planning and implementation, and would therefore hopefully involve discussions with all the people concerned. As an integral part of the research, observations of the new equipment and new production techniques would also be made.

While there has been considerable speculation and public debate on 'new technology', there have been very few studies of its introduction into the workplace in New Zealand, and so a study of The Star would break new ground in the social sciences. For this reason the work would be an extremely valuable contribution to sociological research.

1. Research Methods

The research requires discussion (during a period of several months) with:

1) management personnel involved in initiating the changeover;

2) members of staff responsible for the detailed planning of all aspects of the change:

i) replacement and modification of machinery and equipment,

ii) alterations to the layout of different production departments,

iii) re-training of staff in new production techniques, and

iv) managing the transition from the old methods and equipment to the new.

3) people whose work altered with the changed production techniques and equipment, which would include past and present employees of The Star.

The research also requires detailed observations to be made of the work done by employees at each of the stages of the new computerised work process.

Every attempt will be made to see that the study does NOT disrupt the work of the organisation in any way. In fact, the success of the research depends upon the researcher's presence obtruding as little as possible, so all attempts will be made to fit the study round the normal work-flow of The Star's daily and community newspaper production. As much as possible, time would be spent in conversation with people during their morning tea and lunch breaks, and over drinks after work. However, from a sociological point of view, what people say about the work they do often makes most sense in the actual work context. For this reason it is extremely

important to the success of the study that some discussions about aspects of an employee's job be held in the work-place, but only when deadlines are met and the employee is waiting for the next batch of work to arrive. It is fully expected that any manager or supervisor would draw attention to occasions when the research was seen to disrupt people's work.

There are no plans at this stage to administer questionnaires to staff. If, however, a decision to do so is made, management and chapel representatives would be informed of the purpose and nature of the questionnaire. The aggregated results would also be made available.

2. Confidentiality

It should be stressed that confidentiality is considered to be of the utmost importance in any social research. Furthermore, given the highly topical nature of the study, an undertaking is given that, during the course of the fieldwork, no public statement or public presentation of any research material will be made without prior consultation with management and relevant chapel representatives. The Ph.D. thesis, based on the research, is expected to be completed by April, 1983.

3. Consultation

The study obviously depends upon obtaining the full co-operation of The Star's management and staff. Contact has been made with the Printing Union and the Printers' Chapel, while approval for the study is still to be sought from the Photo-engravers' and Journalists' Chapels.

As this study breaks new ground, it is difficult to foresee every contingency. It is hoped that there would be possibilities for future consultation as the research proceeds.

Roberta Hill

Ph.D Candidate

October 1980.

APPENDIX C

EXTRACTS FROM PRINTING UNION AWARD: NEW TECHNOLOGY PROVISIONS[1]

Preamble to Award[2]

Joint Statement by NPA and Printing Union

The parties to this agreement have recognised that the needs of the newspaper industry are in the process of fundamental change. New developments in this field have meant, and will continue to mean in the future, that skills and practices applicable to the more traditional forms of newspaper printing will in some cases diminish and in others will be replaced by computerised processes and techniques.

The parties have recognised that there will be areas where some staff will be affected to a greater degree than others and accordingly have, for the protection of the Industry and their members, entered into this agreement to bring about the full and efficient utilisation of the new technology.

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[1]Material in this Appendix is abstracted from the New Zealand Metropolitan, Provincial, Suburban and other Newspapers Printing and Publishing Employees Registered Collective Agreement/Award between the NPA and the Printing Union. For consistency, the numbers of the paragraphs in this Appendix - and those referred to in the thesis - relate to the numbers appearing in the 1981 Award. A date in brackets at the end of a clause refers to the year in which the clause was first incorporated in the Award.

[2]First included in the 1977 Award.

It is further recognised that the Industry allowance incorporated in this agreement covers the technological advances that are occurring.

It is acknowledged that the basis of this agreement is one of co-operation between the parties during this important period in Newspaper publishing.

CLAUSE

22 INDUSTRY ALLOWANCE

22.1 The parties have entered into this agreement to bring about the full and efficient utilisation of the new technology and the changes associated with the introduction of these new processes and techniques. In recognition of the acceptance of these changes an Industry Allowance of $11.40[1] per week will be paid to all full time workers covered by this agreement; part time workers (working 30 hours or less per week) shall be paid $5.70 per week. (1977)

22.2 The Industry Allowance referred to in this clause shall be additional to rates of wages and allowances provided in clauses 17, 18, 19, 20 and 21 but shall not be included in the calculation of overtime or penalty payments. (1977)

25 INTRODUCTION OF NEW EQUIPMENT AND RETRAINING OF STAFF

25.1 It is the intention of employers to staff the typographical section of an establishment with tradesmen, insofar as they are available having regard to clauses (26 and 27) of this Agreement. Where the introduction of new equipment has taken place and retraining of staff becomes necessary hand and machine typographers, stereotypers and typographical apprentices will be given the opportunity to be retrained progressively in ordinary company time in all aspects of typesetting and composition, hand and machine, and equipment used by the company for these purposes including the techniques of mark up, composition keyboarding or operations of photo typesetting equipment. (1977)

25.2 Similar principles shall apply to the retraining of other production workers. (1977)

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[1]Note: this amount refers to the 1981 Allowance.

25.3 Should it be necessary for individual employer parties to this agreement to use keyboard operators other than journeymen (being members of the New Zealand Printing Trades Union) then such operators shall be replaced by non-journeymen ONLY after suitably skilled typographers employed by that employer have been given preference and that the conditions of clause (26) of this agreement have been satisfied. (1977)

25.4 Where replacement is necessary the employer shall actively seek by public advertisement the engagement of additional tradesmen with the skills required. (1977)

26 RETRAINING

26.1 The employer shall maintain a continuous review of the established retraining programme and tradesmen will continue to be retrained to ensure their competency and efficiency. (1977)

26.2 In all cases of the transfer of a worker to a higher skilled position following his retraining by the employer, any higher rate of wages as specified in clauses (17 and 18) of this agreement shall be paid no later than one month following the date of completion of a retraining period and his undertaking work and his continuing to undertake such work for production purposes. (1977)

35 COMPUTER INPUT

35.1 The operation of composing equipment, retrieval of NZPA[1] wire copy transmitted to storage for the purpose of making alterations in accordance with sub-editor's marks on hard copy and the release of material from computer storage to photo-composing machines, shall be the work of members of the New Zealand Printing Trades Union. (1980)

35.2 Sub-editors may use VDUs in the composing room to correct urgent matters of fact and actionable material including deletions but shall not insert, new sentences, nor shall they insert or alter typesetting commands. (1977[2])

35.3 Access to the computer news file for viewing purposes only by means of a limited keyboard VDT and a line printer facility shall be available if required in the editorial department.

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[1] New Zealand Press Association.

[2] The actual wording of the sub-clause differs although its import is substantially the same.

NOTE: The VDT located in the editorial department is not an input, output or composing device but is merely a viewing terminal to enable sub-editors to check what is contained in the computer news file. (1980)

35.4 Readers may use VDUs to make literal or minor corrections including deletion of words and phrases but shall not insert new sentences, nor shall they insert or alter typesetting commands. (1977[1])

35.5 In offices equipped for computerised photo-setting, telephone operators receiving and processing copy for reproduction in the classified columns of a newspaper via paper or magnetic tape, OCR or on-line, shall be members of the NZPTU.[2] Such workers may be non-journeymen operators specified under subclause 17:9 of clause 17 of this agreement. (1978)

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[1] See preceding footnote.

[2] Printing Union.

GLOSSARY OF SELECTED TERMS

Broke	See Hyphenated.
Bromide	Photographic paper on which phototypeset material is produced for paste-up.
Central processing unit (CPU)	The part of the computer system which stores and processes copy digitally.
Chapel	'In-house' union structure in the newspaper industry.
Chase	A metal frame in which the completed metal page of type is 'locked-up'.
Classified ads	Advertisements which are arranged in alphabetical order within a classification.
Cold type	Method of newspaper production which produces type as artwork on photographic paper in a photo-electronic process. The term is used to differentiate it from the old hot-metal process.
Cold-type department	So-named at The Star when the Department began producing (in the mid-seventies) display advertising by a cold-type method - the forerunner to the fully computerised system introduced in 1980.
Comp room	The composing room in which editorial and advertising material is set in type and composed in columns for subsequent processing into printing plates.
Composing	Setting of type into lines and paragraphs within specified column widths.
Compositor (Comp)	A printing tradesman responsible for composing typeset material and photos in columns to form a page.
Direct-inputting	The inputting of copy directly into the computer complete with necessary typesetting instructions.
Direct lithographic (di-litho)	Method of printing in which the surface of the page is flat, unlike the hot-metal letterpress method where the image and non-image areas are at a different height.
Display ads	Advertisements which provide a significant display of advertising material, and may extend over several columns or fill an entire page.

Disser	The dissassembly bar on a linotype machine which returned the matrices to their correct magazine after a line of type had been cast.
Electronic copy	Editorial and advertising copy which is entirely stored and processed in the computer prior to printing.
Flong	Laminated sheet which is pressed onto the forme from which the final printing plates are cast for the rotary press in the letter-press method of printing.
Font	A complete set of type, both upper and lower case, punctuation marks and symbols of a particular style.
Forme	The name given to the completed page of metal type, locked into the chase, used to produce the final printing plate.
Galley proof	A proof sheet taken from a completed galley and used for proof-reading.
Galley	A collection of lines of type in metal trays which are assembled in columns prior to making-up the page.
H and J	The hyphenation and justification of lines of type.
Hard copy	Editorial or advertising text in paper form.
Hardware	The computer itself, and peripheral machines for storing, 'keying in' and printing out information.
Hot metal	Method of setting type by linotype or line-casting machine where type images or slugs are cast from molten metal. The term is used to differentiate the older methods of typesetting from photocomposition - that is, cold type.
Hyphenated	The breaking of a word syllabically at the end of a line.
Justified	The construction of a line of type which is exactly equal to the column width. Under hot metal, words are spaced using pieces of lead.
Layout	A plan, drawn up by a sub-editor, for the arrangement of advertisements, photographs and editorial material on a page.
Letterpress method	Hot-metal production of a printed image where the impression on the paper is caused by the inking of raised portions of the plate.

Line of type	Metal type created on a linotype machine. Also known as a slug.
Linecasting machine	Similar to a linotype machine, but driven automatically from a punched paper tape which was produced on a TTS machine.
Lino-mechanics	Tradesmen who maintained machinery under the hot-metal system.
Linotype machine	A machine invented in 1886 which mechanised the production and setting of type by creating complete lines of type from matrices and molten metal.
Linotype operator	Printing tradesman who set lines of type in molten metal.
Literals	Spelling mistakes in a newspaper.
Mark-up	Computer command which - for any piece of copy - specifies its location, column measure, font size and type.
Matrices (Mats)	Female dies of letters on a linotype machine used in the casting of lines of type. (See Type.)
NPA	Newspaper Publishers' Association (newspaper employers' association).
Paste-up	The cold-type technique of cutting and waxing copy from bromides, and fixing the bromide strips onto layout sheets to produce the final image of the page. Work carried out by comps.
Photo-composition	A method of setting type photographically by exposing a photo-sensitised film or paper with images of type characters which have been arranged in proper sequence, and are exposed at the appropriate time and at the appropriate location to provide a typeset product (see Photosetter).
Photo-engraving	Under the hot-metal system, the reproduction of photographs and illustrations on zinc blocks.
Photosetter	Computer-controlled machine capable of setting type at a speed of 2600 newspaper lines per minute. As an electronic signal is received, light is projected through a lens onto light-sensitive paper and strobes up and down a grid pattern to form each character as the signal continues. (The principle is similar to that used to produce a television picture.)

Point	The size or height of the type is described by a system of point measurement.
Qwerty keyboard	The keyboard of a conventional typewriter, named after the first five keys on the top line of alphabetical characters.
Rotary	The department at The Star in which the paper is printed on the rotary press.
Rules	Horizontal metal strips which were inserted to separate different items on the metal page of type.
Run-on ads	Single column classified advertisments which involve no tabulation, spacing or borders, but simply run-on in the column.
Setting stick	Small metal tray in which individual pieces of type were set by hand.
Slugs	Lines of metal type produced by the linotype machine.
Software	Any programs used to operate a computer.
Space band key	Key on a linotype machine which when struck dropped metal wedges between the matrices to justify the line of type when cast.
Spaced ads	Classified ads which involve tabulation, spacing and possibly borders, or other special typesetting features.
Stereo	Department where the curved metal plates were made to fit the rotary press.
Stereotyper	The tradesman who made the curved printing plate from the metal page to fit the rotary press.
Stone	A bench on which the galleys were assembled into metal pages.
Stonehand	A hot-metal compositor making up the pages in metal. (See Compositor.)
Sub	Sub-editor. (See Subbing.)
Subbing	The editing of editorial copy by sub-editors.
System controller	Retrained linotype operator or comp who controls and operates the computer-based (cold type) production system.
Tele-ad operator	Retrained telephonist-typist who records and typesets 'phone advertisements using a head-set and computer terminal (VDT).

TTS machine	A teletypesetting machine - a specially adapted typewriter which punched a paper tape used to produce type from a linecasting machine.
TTS operator	Non-journeyman member of the Printing Union who operated a TTS machine.
Type	Piece of metal having on its upper surface the replica of a letter cast from a matrix on a linotype machine.
VDT operator	Visual Display Terminal (i.e. computer terminal) operator.
Visual display terminal (VDT)	Computer terminal (with video screen) connected to the CPU. Copy and typesetting instructions are inserted into the computer via the keyboard of the terminal.